REPEATER JOURNAL

CVRA - SouthEastern Repeater Association, Inc.

August, 1985

1.50

Representing UHF-VHF Interests Throughout North Carolina, South Carolina, Virginia, Tennessee, West Virginia & Eastern Kentucky

Summertime

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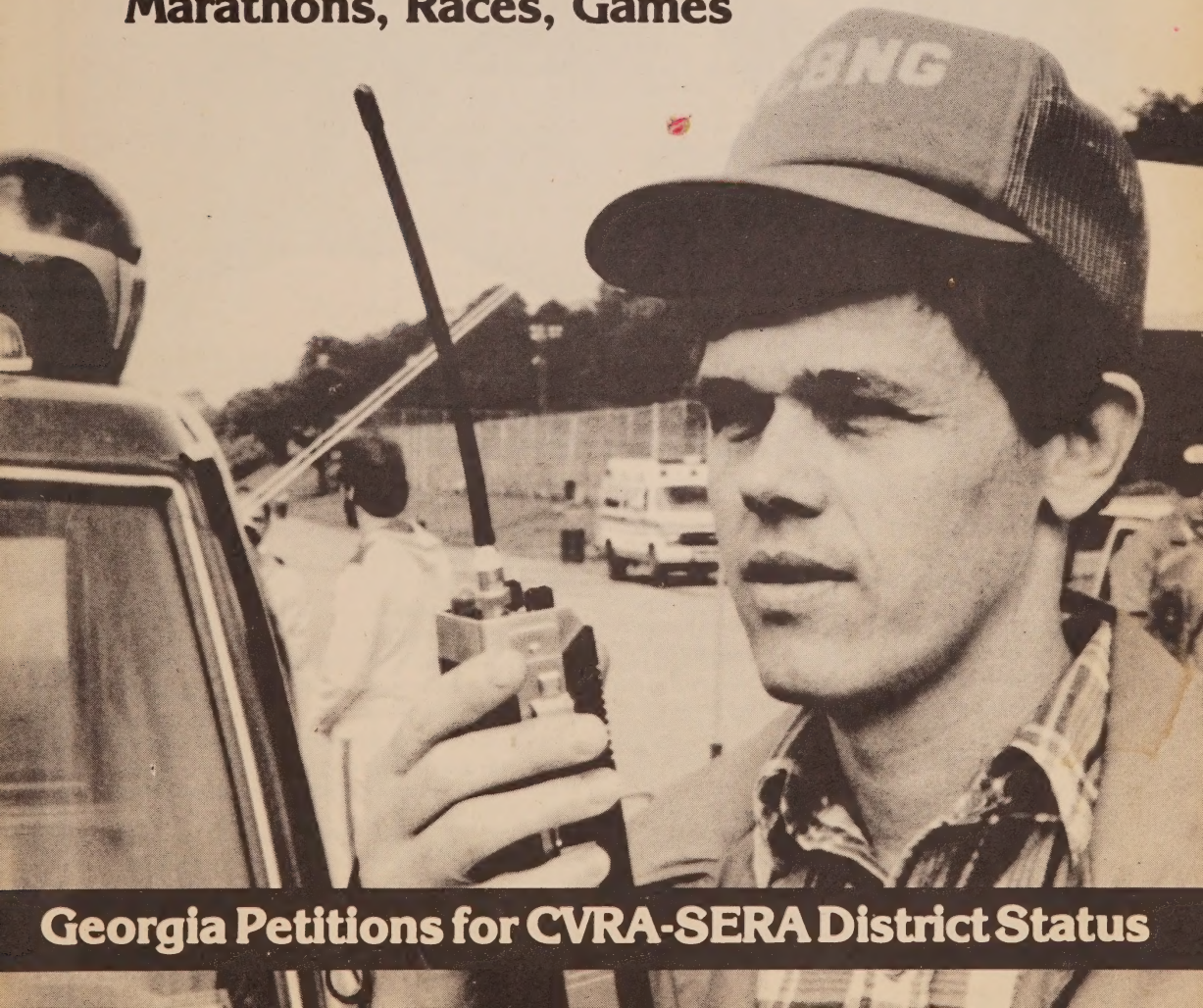
Marathons, Races, Games



Georgia Petitions for CVRA-SERA District Status

I convinced my club to buy a repeater controller from ACC and I'm glad I did.

The group I belong to was looking to upgrade our system and I was the one asked to investigate. Of course, we've always been the best in our area but we needed more. We needed a system that was reliable, easy to interface, cost-effective, and something that would free-up the technical committee for more interesting projects than just keeping the equipment running.

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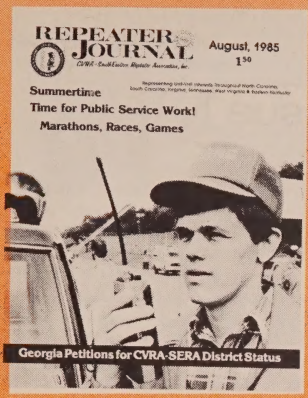

ON THE COVER

The summer brings forth many races, marathons and community events, which Amateur radio plays a large part in providing communications. These events are ideal times for clubs to participate and deal out a little public service for their community. Our cover public service operator is Jim Perdue, KC8NG, as he recently participated in the Mountain Festival Marathon communications with the Bluefield East River ARC.

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REPEATER JOURNAL

CVRA-SouthEastern Repeater Association, Inc.

AUGUST, SEPT., OCT.
VOLUME 14, NO. 3
ORGANIZED IN 1971
"IN OUR 14th YEAR"

Editorial Comment

A Time For Us To Reflect . . . .

Eight Years!

Yeah Gads! How time does fly. It was eight years ago with the August issue, I took over as editor of the Repeater Journal.

Eight years I have spent at the helm of the voice of one of the finest repeater organizations in the nation.

Over these eight years, I have seen many Directors, Vice-Directors and officers come and go. Most were top-notch, public spirited hams who did outstanding jobs. Some are still with us in some capacity with the organization.

I remember well getting ready for that August 1977 issue of the Journal. Buster Brafford, WB4ZIN of Burlington, was doing the typesetting, pasteup and printing of the Journal. We didn't really have a format to follow. Basically, I just got the stories ready for Buster's typesetter, he did most of the layout as he went along. In those days the Journal had been typeset for 3 or 4 issues. Prior to that it was typewritten. We got the book out, just a few days late, but it went out by early August.

Today's Journal is far removed from the 1977 issue, which boasted 44 pages. Today's Journal averages about 48 pages, but the format has been changed to 8-1/2x11. Buster dilligently stuck with us for several years, but the day and night work of printing the Journal, and collating and binding by hand was just too much and finally he had to relinquish the job.

It was then we went to a big press for the first time, and have stayed since. There have only been 3 printers doing the Journal since Buster had to give it up. For the past 3 issues we have been getting typesetting and printing done in Kernersville,

Continued on Page 14

Georgia Files Petition For District

So now we are to become seven, already dubbed the "Magnificent Seven!" As a result of the Georgia Repeater Council meeting at Atlanta the first weekend of July, repeater owners in Georgia are petitioning CVRA-SERA to become a District of our organization.

It was just four months ago that Eastern Kentucky repeater owners petitioned for District status, and are now full fledged members of CVRA-SERA.

There are separate stories in this issue (we held space awaiting the results) about the Georgia meeting, but as I write this, the information is still on the way to me. I received a phone call from Lindsay, W4IZI, informing me of the decision.

He said the meeting was long, and very informative. All the factions there presented their own ideas about coordination at the meeting, and no stone was left unturned, as far as letting anyone have his say. In the end, 21 repeater owners signed a petition on the spot for CVRA-SERA district status.

This is a great compliment to our organization. We did not win anything, we didn't beat anyone else out of anything. Fortunately, our organization was chosen as the one that Georgia repeater owners want to be a part of.

When the petition is presented to our President, Carter Cogle, K4ARO, he will mail out ballots to our six District Directors and other voting officers, and after 30 days, they will vote. If the votes are affirmate, Georgia will officially become the seventh District in CVRA-SERA.

Lindsay said that temporary Directors were to be appointed at the meeting to coordinate the flow of information between CVRA-SERA and Georgia, until the final word comes. Then an election of all Full Member repeaters in Georgia will be held to elect permanent Director and Vice-Director for that District.

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REPEATER JOURNAL

MAY, JUNE, JULY 1985

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About the Repeater Journal . . .

The CVRA-SERA REPEATER JOURNAL is published quarterly, during the months of February, May, August and November of each year and mailed free to members of CVRA-Southeastern Repeater Association, Inc., a non-profit coordinating organization made up of repeater owners and users. Permission is granted for use of material contained in the REPEATER JOURNAL, provided proper credit is given. The REPEATER JOURNAL Editor will swap newsletters with other Repeater Councils and News organizations on request. The REPEATER JOURNAL press run is 4,500 copies with circulation membership in excess of 3,900 and is entered as Third Class Mail at the Post Office in Greensboro, N.C. REPEATER JOURNAL copies may also be obtained at most area hamfests for $1.25 per copy. All news and Newsletter exchanges should be mailed to the Editor and Publisher, Wayne C. Williams, K4MOB, 600 Lakedale Road, Colfax, N.C. 27235.

About Associate Membership

Repeater users and Amateurs are invited to join CVRA-SERA as Associate Members. A membership fee of $5.00 per year will enable members to support the organization and receive the "Repeater Journal". Note: Associate Membership deadlines are on the 15th of the month preceding months of publication – Jan. 15, April 15, July 15 and October 15. Persons joining or renewing their membership must have their application into the Greensboro Post Office Box by these deadlines to receive the next upcoming Repeater Journal in February, May, August and November. Memberships received after any deadline will not receive the next to be published Journal, but instead will receive the forthcoming issue the next quarter. Memberships received at hamfests will receive a current "Repeater Journal" as long as supplies are available and the next regularly scheduled issue through the mail.

About Full Repeater Membership . . .

Officers and Directors are elected from members of CVRA-SERA Full Membership. Any repeater owner or club may join our organization as a Full Member by filling out an application and submitting it with $8.00 annual membership fee. Two representatives are named for each membership and each receive the "Repeater Journal." The Full Member repeater is appropriately recognized as a full member repeater in our repeater index in the Journal. Full Memberships all expire on December 31 each calendar year.

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About CVRA-SERA . . .

CVRA-Southeastern Repeater Association, Inc. is one of the largest Repeater Organizations in the United States. In our 14th year of operation, the Association shows positive proof that coordination efforts have paid off in the Districts it serves. Two of our Districts are 11th and 13th in the Nation in numbers of Amateur repeaters. We shall strive to continue to keep our area interference free

Georgia Petitions For Membership

— by Lindsay Cleveland, W4IZI

At the July 6th Atlanta Hamfest, about 120 repeater owners, sponsors, and users got together and decided to get Georgia "organized"! Petitions for making Georgia the next CVRA-SERA district were signed by more than 20 repeater groups (all of them full members of CVRA-SERA).

The large turnout was due to the efforts of Eddy Kosobucki, K4JNL (Georgia SM), Bill Corn, N4EFL, and some other folks they roped in. They mailed lots of letters and did a lot of "talking it upp" on the air. As a result, there were folks from all over the state.

To handle the details of getting the new district started, keeping everyone posted as to what is going on, and whatever else needs doing, the group accepted the kind offers of Newell Anderson, W4AQE, and John Robertson, N4BGL. And of course CVRA-SERA officers and appointees will be lending whatever assistance they can. But this is a Georgia show being run by Georgia repeater folks.

Next step will be the acceptance of the new District by the Association, and then an election for the Director and Vice-Director.

The other major topic at the Atlanta Hamfest meeting was 20Khz vs. 15Khz repeater channel spacing. Sonny Strawn, WB4JEH, of the Georgia Repeater Council read from a listing he had prepared detailing what repeaters would have to move to what frequencies if a 20Khz band plan were adopted. Comments were heard from the Alabama VHF-UHF Council advocating 20 Khz channels, and also from the Florida Repeater Council reporting that the 15Khz channels are working fine in that state. Since this was the first time most of the Georgia folks had heard of the proposed channels and repeater frequency changes, no action was taken. However, the Metro Atlanta Telephone Pioneer A.R.C. (MATPARC) representatives at the meeting offered to publish the information in their next newsletter. Copies will be mailed to all the Georgia repeaters. Whether or not Georgia will stay with 15Khz channels or go to 20Khz is still an unresolved issue.

With Georgia as a CVRA-SERA District, we will soon have seven Districts: "The Magnificent Seven!"

500 Repeater Members Can Be A Reality Now

It is entirely possible that CVRA—SERA will attain the magic 500 mark with Full Member repeaters before the year is out.

As of July 20, a total of 479 machines were listed as full members, representing 346 memberships. Presently CVRA-SERA total territorial repeaters stand at slightly over 765, but the total number will jump next month with the addition of Georgia as a District. Georgia has an excess of 125 repeaters which will be added to our total.

As of now, we represent slightly over 57% of ALL repeaters in our Six Districts, that percentage will drop slightly with the addition of the Georgia repeaters. Percentage of membership in districts grows more each year and will continue to grow as more repeaters in Districts find that supporting our organization is a small price to pay for what the organization has done for them as repeater owners and users over the past 14 years.

By state breakdown, North Carolina continues to lead in memberships with 147 repeaters. Virginia is second with 90 and Tennessee has 83. South Carolina has 53 Full Member repeaters, West Virginia has 39, and Eastern Kentucky has 16. Outside the District, Georgia has 49 and Alabama 2.

CVRA-SERA, due to tremendous cooperation with repeater owners and users has been able to provide a relatively clear area as far as interference is concerned. Many "non" member repeaters are realizing this and are joining. Many have not discovered our value, but we are working on that. Obviously CVRA-SERA is not what everyone would like to have, but the success of the organization is obvious when you check around the States with are represented.

Central Ga. Hamfest

The Central Georgia ARC will present their annual Hamfest on October 12 and 13 at Warner Robins, Ga. Special features include Packet radio demo, transmitter hunt, forums, flea market, dealers. Information: Curtis M. Carter, P.O. Box 2585, Warner Robins, Ga. 31099.

New District Sections Delayed Until November

We had promised a special section on our newest District, Eastern Kentucky for this issue of the Journal, but the fellows there just didn't have time to get things ready.

They have been quite busy getting established, and the new Director and Vice-Director elected. Fred Jones, WA4SWF of Louisa has been elected the first Director of the new District, and Terry Estes, WB4ASZ of Winchester will serve as the first Vice-Director. Their full addresses and phone numbers appear on the back cover.

With the petition filing of Georgia, the Journal staff will attempt to have a combined special section in the November issue, introducing you to both our new districts, Eastern Kentucky and Georgia.

In Georgia, Newell Anderson and John Robertson have been named as temporary contacts as the State moves toward district status. These two will be working closely with Lindsay Cleveland, W4IZI, and President Carter Cogle in coming months getting materials and information before repeater owners and users in Georgia.

Special information packets will be mailed soon to all Georgia repeater owners, explaining CVRA-SERA and providing information to them as to coordination policies and bandplans of their new coordination organization.

Watch for more information about these two districts in the November issue of the Repeater Journal. (Editor)

Georgia Has Good Start With Full Membership

Usually it is a struggle for new Districts to get memberships when joining CVRA-SERA, but Georgia has a good head start.

The new 7th, to be, District boasts a total of 49 repeaters who are already Full Members of CVRA-SERA. Prior to becoming a District, our organization could offer these membership repeaters nothing but a free listing in the Journal, and a copy each quarter, still they chose to continue supporting us, and now their support is paying off. These Repeaters are the only Georgia repeaters listed in this issue of the Journal. Next issue, the entire state will become a part of the listings when District status is official.

Va. State ARRL Conv.

The 1985 Virginia State ARRL Convention will be held in conjunction with the Tidewater 10th Annual Amateur Radio and Computer Fair on September 21 & 22.

THE TWENTY-EIGHTH ANNUAL

SHELBY HAMFEST

W4NYR
SARC CLUB
SHELBY AMATEUR RADIO CLUB

"The Grand-Daddy Of Them All"

- REGISTRATION:
  $5.00 At The Gate
  $4.00 For Preregistration
  Children under 12 - FREE!
- Free Parking space across Road from Main Entrance on new Paved, Lighted Lot.
- Handicapped & Tailgaters use Gate near Intersection of Hwy. 74 Business and Hwy. 180.
- New Paved Fairgrounds
- Food service on the grounds... Shelby's famous Barbecue and a variety of other food and snacks... with most of Shelby's fine eating places within one mile.
- Trailer Facilities, 40 sites with full hook-ups, water, sewer and electricity. Ample power for your Air-Conditioners. Unlimited field space for self-contained trailers and tent campers. No reservations. FIRST COME, FIRST SERVED
- Bingo and Arts & Crafts, Shopping Mall within 1 mile for the Ladies.
- Clean, Sanitary Rest Rooms.
- 15 ACRES OF FLEA MARKET. Plenty space for all! TAILGATERS MUST REGISTER. Some undercover space available with rental of table. No overnight security.
- New equipment Dealers as well as used dealers may have inside space with power available and overnight security at a nominal charge.
- Additional inside space in main building (3rd row) again available this year.
- Easy to locate. Fairgrounds are on Business U.S. 74 and N.C. 180 on the East side of Shelby, N.C.
- PLEASE REMEMBER THIS, "NO member of the Shelby Amateur Radio Club or any member of their family is eligible to win a prize.
- TALK IN: 146.28-88
- Sunday School on Hamfest Grounds Sunday Morning. Time announced.

For Further Information - Call or Write:

PHARIS GREENE, KB4AF
717 MAYO STREET
SHELBY,N.C. 28150
Phone (704) 482-5204

JOHN LEDFORD, N4GOQ
3410 OAK CREST DRIVE
SHELBY, N.C. 28150
Phone (704) 482-4507

For Dealer Registration - Call or Write:

STEPHEN T. ROBERTS, N4FMH
207 OSBORNE STREET, SHELBY, N.C. 28150
Phone (704) 482-1276 AFTER 4:00 p.m.

DAVID ROSE, WD4DJA
1516 KNOX DRIVE, SHELBY, N.C. 28150
Phone (704) 487-5654 - WEEKENDS ONLY

AUGUST 31st AND SEPTEMBER 1st, 1985

TO BE HELD AT SHELBY, N.C.
CLEVELAND COUNTY FAIRGROUNDS
LAST YEARS ATTENDANCE OVER 10,000
EXPECTING OVER 12,000 THIS YEAR
On US 74 Business on the east side of Shelby

FCC EXAM: Saturday, August 31, 9:00 a.m., Cleveland Tech. College, adjoining Hamfest Grounds. Mail 610 Form, $4.00 Check and copy of present license to: CHARLOTTE VEC, 227 BENNETT LANE, CHARLOTTE, N.C. 28213. CUT OFF date is August 24. Appointment tickets will be mailed.

SATURDAY PRIZE: ICOM 271-A 2M ALL MODE
SUNDAY 1st PRIZE: ICOM 751 With Ext. Pwr Sup
SUNDAY 2nd PRIZE: YAESU 757 GX
SUNDAY 3rd PRIZE: KENWOOD TR-7950
ADVANCE REG. PRIZE: SANTEC ST-200ET 2-Meter Handheld (Drawing Sat. 1 p.m.)

PLUS many, many more prizes

TAILGATERS AND DEALERS - PLEASE cooperate with our Parking Committee. They will be working hard to make use of all available space. Thank you in Advance.

YOU DO NOT HAVE TO BE PRESENT TO WIN ANY MAIN PRIZES!

AREA MOTELS/HOTELS

Some of the motels in the area are listed below. They recommend that you call well in advance as their week-end business is good and reservations may be a problem.

SHELBY - Holiday Inn, Governors Inn, Town House, Shelby Motel
KINGS MOUNTAIN - Holiday Inn
GASTONIA - Mid-town, Howard Johnson, Holiday Inn, Scottish Inn
GAFFNEY - Holiday Inn
FOREST CITY - Gardo's, Goode's, Big Horn
LINCOLNTON - Town & Country
HICKORY - Howard Johnson, Holiday Inn, Mull's, Ramada Inn.

Pre-Registration Tickets Received after August 15 – Will be held at Gate!

The Shelby Hamfest

W4NYR
SARC CLUB
SHELBY AMATEUR RADIO CLUB

ARRL

Pre-Registration Form

I would like to Pre-Register for the SHELBY HAMFEST.
Enclosed is my check for:

_____ Hamfest Tickets @ $4.00 each ..... $_____
Total ..... $_____

UNDER 12 FREE

NAME_____ CALL_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

MAIL TO: REGISTRATION, SHELBY AMATEUR RADIO CLUB
P.O. BOX 2206, SHELBY, N.C. 28151-2206

RJ-8

Pack up and head for the-
GREATER GREENSBORO HAMFEST

The Mark 4 Radio Club Cordially Invites You To- The 5th Annual 1985 Greater Greensboro N.C. Hamfest

DATE:	*November 30th & December 1st*
HOURS:	*9:00 A.M. — 5:00 P.M.*
LOCATION:	*National Guard Armory-Franklin Blvd.*
GRAND PRIZE:	*ICOM 751 & External Power Supply*
2nd Prize:	*ICOM O2-AT 2½watt 2-Meter FM HT*
Pre-Reg.:	*SANTEC ST-200ET 1½watt 2-Meter FM HT*
★:	*Many Other Valuable Prizes To Be Given Hourly.*
PRE-REGISTRATION:	*$4.00 For Advance Tickets*
REGISTRATION:	*$5.00 At The Gate*
FLEA MARKET:	*Price Of Ticket (Outside)*
INSIDE:	*Price Of Ticket + $9.00 (per table) Rental*

TALK IN: 145.250 (—.600) — 146.520 — Simplex

Major Prizes Obtained Through ICOM, F&M Electronics, Williams Radio Sales.

—Dealers & Flea Market—

For Booth + Table Reservations — Floor Plan — Cost + Motel Accomodations.

Write or Call: Coy Hennis (WD4NHL)
Rt. 7 Box 729
Greensboro, N.C. 27407
Phone- (919)-294-2841
Call Between 8:00 A.M. — 9:30 A.M.

For Pre-Registration Tickets ONLY.

Write: Fred Redmon (N4GGD)
3109 Goodall St.
Greensboro, N.C. 27406

A.R.R.L APPROVED HAMFEST

WALK IN - F.C.C. Exams To Be Given By **AE4N/MARK 4 — V.E.C.**

Bluefield Club Obtains Dismal Park Site at 4,000-feet In Virginia

— by Don Williams, WA4K

The East River Amateur Radio Club in Bluefield, West Virginia has taken possession of a radio site on Dismal Park in Giles County, Virginia, at elevation 4087 feet above mean sea level.

The site became available when WVVA TV in Bluefield ceased operation of their microwave relay system between Roanoke, Virginia and Bluefield. The system had been used since 1955 to relay NBC Programming from its termination in Roanoke.

The television station gave the facility (all but microwave equipment and dishes) to the club in turn for labor for removing dishes and waveguides from the Poor Mountain and Dismal Peak sites. These jobs were completed by club members in May (Roanoke) and July (Dismal Peak) by a crew of club members. Use of the sites by the club was contingent upon receipt of a National Forest special use permit which was applied for on May 28th.

Club members hope to use the galvanized transmitter building and fifty foot wooden structure to house a new repeater to be called the Narrows/Dismal Peak repeater. The repeater is expected to have coverage well into North Carolina and West Virginia, and over a large portion of western Virginia. Local coverage will include the Roanoke Valley, the New River Valley, and Southern West Virginia south of Beckley.

The repeater will be on either 147.225 or 145.49 Mhz, a decision still to be made by the club's repeater committee. Both frequencies have been coordinated, but a decision must be made whether or not to change the 145.59 frequency of the club's East River Mountain repeater.

The location is approximately 6 miles SSW of Narrows, Virginia, and 13 miles NNW of Dublin, Virginia. Antenna elevation will be approximately 4150 feet above mean sea level with a height above average terrain of approximately 1500 feet.

Forsyth Club Sponsors Explorer Post

The Forsyth Amateur Radio Club, in Winston-Salem, N.C., has chartered Amateur Radio Explorer Post 73 (Old Hickory Council, BSA) in an attempt to draw more young people into the hobby. Exploring is the young adult division of the Boy Scouts of America and is open to young men and women 14 (9th grade) through 20 years of age. Posts are organized by special interest -- in this case ham radio. Post 73 currently includes 12 youth members.

In becoming a chartered partner in Scouting's Exploring program, the Forsyth Club has committed itself to providing an avenue for young people to discover amateur radio and to explore communications electronics both for fun and as a possible career field. The club will provide a meeting place, adult advisors, technical help, and use of the club station, W4NC, to the young adults. Scouting's Exploring Division offers help with recruiting and identifying young people interested in amateur radio and electronics and with additional activities of interest to young men and women.

Well, over a thousand scouts, scouters, and public were introduced to Amateur Radion by members of Explorer Post 73. These young adult hams operated the Forsyth Club's station at the Old Hickory Council Scout-O-Rama, a public display of all phases of scouting skills and activity.

The amateur radio explorer post exhibit included a station and an opportunity to learn some code. The station, W4NC, operated on both low bands and two meters. Two of the more interesting contacts made were with other scouting stations. W4MM was operating a scouting activity in Albany, Ga., and W9INX was also operating from a scouting expo in Ft. Wayne, In. These two QSO's provided some scout-to-scout, on-the-air time for the boys at all three sites.

Post members also taught some code to any comers, and a number of cubs and scouts took the opportunity to put a hand on a key and learn to send and receive their initials.

Operating the station were Post Explorers Keith Nelson (KB4DJU), Jaime Burcham (KB4ZMU), Bobby Stitcher (KB4MZV), and Gwyn Armfield (KA4SJV). Adults helping with the exhibit were club president and exploring coordinator Mark Anderson (WB2SMK), who served as control operator most of the day, post advisor Holli Nelson (KB4AKM), and Wayne Byerly (N4BOJ). Other club members who came to "check out" the exhibit included "Con" Conrad (K4BE), Wilson Lamb (W4BOH), and Gene Norris (KC7XN).

Exploring is the young adult division of Boy Scouts of America and is open to young men and women 14 (9th grade) through 20 years of age.

Georgia Petitions For District

Continued from Page 1

Like all other Districts, the Director and Vice-Director of the Georgia District will be THE Frequency Coordinators for that area. They will be able to appoint assistants in various parts of the State to assist in communications and advise in coordination from their particular areas.

It is my understanding that the group is petitioning the entire State as a district, which raises some interesting questions. There are several split repeaters in various parts of the state operating upside down from the CVRA-SERA bandplan, which was appropriate for the Coordination process for Georgia during past years.

Now, since they are becoming a part of CVRA-SERA, the bandplan is different from the one they had adhered to over the years.

As for the index in the Repeater Journal, we do not intend to mark these repeaters "NB" as being not in keeping with our bandplan, until some distinction can be made by the new Georgia Directors. I would assume these repeaters would voluntarily be willing to re-coordinate their repeaters or reverse them in keeping with their ne bandplan. I know, I had talked to several these past months who said they were willing to do this. This will obviously be the "gentlemanly" way to go, especially since it will solve some of the problems they have had with "lockup" in the past with some of our right-side-up repeaters.

A personal word to the "full Member" repeaters in Georgia. Over the years you have chosen to support CVRA-SERA, even though we could not help you in coordination, actually all we could give you was a listing in the Journal, and a Journal to read. I think your support, and awareness of CVRA-SERA certainly played a large part in the decision last month to become a District.

We thank you for your support, and most especially your patience over these years, and now I hope it will pay off for you, and us. The value of having someone in Georgia to cross-merchandise with information, coordination and technical benefits with our organization most especially your neighboring states of South Carolina and Tennessee will be most beneficial in the years to come.

Welcome, Georgia friends, we are very proud to have your great State a part of our organization. We hope we will be able to assist you and do the job you expect of us. Apparently you think so, or you wouldn't have joined us. . . we're glad you did!

— Wayne C. Williams, Editor

Moving Repeater Subject To Re-Coordination

Repeater owners are reminded that your coordinated frequency which your repeater may have operated on for years, would automatically be subject to re-coordination if any drastic changes are made.

Coordinated frequencies are given based on actual location, terrain, antenna height, power and antenna gain. Any changes such as a move, raising the antenna, increasing power may make your repeater cause harmful interference to another system on the same frequency.

Normally no problems occur, but it would be wise to re-coordinate with your State Director IN WRITING, so he would have records.

A theoretical case where a repeater has been on the air for 12 years in a location blocked by Mountains or hills in one direction. The owner decides to upgrade his machine and move it to the top of that mountain. On the other side, another machine on the same frequency has been operating for the past 5 years. Now there is harmful interference.

According to the rules, the repeater who moved is responsible and must take action to prevent the interference, because the moment he moved, he was subject to re-coordination, and in the move, no longer is the "oldest" repeater.

Remember, too, there is NO SUCH THING as a "clear" channel frequency. NO ONE has a right to use valuable spectrum space and claim it is his frequency and no other repeaters should be with hundreds of miles of him, on "his" frequency.

Under normal terrain, the CVRA-SERA coordination policy dictates at least 100 miles separation between co-channel repeaters. Certain conditions may allow two repeaters to co-exist closer than 100 miles. In the Mountains, as much as 150 miles may be required for two machines to operate on the same frequency, however by the same token, two repeaters, one on each side of the mountain less than 50 miles apart have been able to operate safely.

The safest thing, when questions arise, is to contact your State Director.

TENNESSEE TID BITS

— by J. Tom Park, WD4KWP

As many of you know, the job of frequency coordinator is more than just periodically assigning a repeater pair. When you take the job you at least have an idea of the amount & type of work required. Most of the time it is a lot of fun to be able to help fellow hams with their repeater problems. But some days you wonder if it is safe to answer the phone! Last May, I had one such morning.

About 7:00 a.m., I was awakened by a supervisor at the FAA regional control office in Memphis. He introduced himself by name, job title, and ham call. He said that there was a problem with an amateur radio causing interference to an airport control system in Nashville.

My first thoughts were as to how my little 440 repeater could manage to drift or spur out all the way down to the aircraft band. He soon told me how the FAA system worked, its QTH and the time & type of interference. With this meager bit of info, I went hunting.

I soon realized that the only info that I had on a lot of repeaters was the town or section of town, not the exact hill or street name (much less the longitude & latitude).

After a full day of making long distance calls, I finally was able to work out which repeater was causing the interference.

The reason for all this story is that your frequency coordinator needs some help from time to time. If he or any of his official assistants asks you for more info than you were expecting, please help. We are sometimes asked to solve some really strange problems that are not always related to coordination.

(Editor's Note: NOW! You see why our Full Membership chairman gets upset when Full Membership applications are not filled out properly.)

NINTH ANNUAL - - - - - A.R.R.L. APPROVED

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A Place for Packet?

— by Gil Frey, K4JST, Net Manager

I am concerned with questions raised by some of our Virginia Section traffic handlers and ARES members as I walked around the Manassas Hamfest regarding the place of Packet in public service communications. First, I would say that Packet is certainly an exciting mode and that now, right now, is a fine time to get experience with Packet. My previous article in the VA HAM on Packet describes the basics of this mode and I would refer readers to this article for background. Just for reenforcment though, Packet is a digital mode similar to RTTY; it adds two important features: (1) error correction, and (2) the ability to link stations and to route traffic in a network.

TRAFFIC

Traffic handlers who have used RTTY for HF message handling should have little trouble seeing the importance of error correction. With Packet, you are not burdened with endless frills since files sent via Packet require no editing after the contact is completed. We are fortunate to have MSO or "Mailbox" for HF RTTY which is available for traffic here in Virginia, but anyone who has tried to pick up their traffic on a noisy night (QRM/QRN) has been frustrated by having to instruct the KA4ERP MSO to send the file two or three times in order to get a usable copy. With a Packet MSO (PBBS, Packet Bulletin Board System), the problem of garbles does not exist and noise just does not present a problem. The advantage of a MSO, of course, is that the station you want to contact does not have to be available at a scheduled net time. Imagine a traffic system with nets in session around the clock. Now add the speed of say 600 Baud effective (720 wpm for those who think 20 wpm CW is a little fast for a Section Net). What if we throw in the fact that the operators do not need to develop an obscure skill like using an Iambic keyer to become a first rate traffic handler. The point is, the efficiency of traffic handling can go way up and the number of operators willing to participate can expand dramatically when you drop the stringent time constraints of our present nets. Do you loose the social aspects of the nets? No, I think not. Even the present HF MSO is routinely used for short informal messages between the users, perhaps more so than our often busy NTS nets (when was the last time you heard an informal on EAN/4?).

ARES

Imagine the a North Anna nuclear drill in the near future. You are sent to Burr Hill and expect to spend the drill eating pizza and trying to stay awake after 8 p.m. The first three hours go just like you expected, but then the scenario takes a warped twist and they send a school bus loaded with 45 Scouts right at your location. You suddenly have five pieces of traffic for the Red Cross Disaster Chairman, the Evacuation Center Coordinator and three others. A half hour later you finally clear the Fredricksburg repeater (since no one can work you direct) and those guys can go back to their directed net.

Ten minutes later you are back and have two replies (one is 96 words long) and a query. After a three minute wait, you check in to the net and list your traffic. NCS says that the link to Richmond OES is busy and Carolina EOC only checks in at half past the hour (it's 6:35 pm right now). There is, however, a piece of Priority traffic to the Evacuation Center requesting the time of arrival, plus the name and Scout number of each boy when the bus arrives (and it is signed by a FEMA referee). When you try to respond (expletive deleted) you notice the repeater needs three attempts to key it..

If this doesn't sound familiar, then you haven't participated in one of these drills. Picture instead, November, 1986. You are at Burr Hill. The buzzer on your TRS-80 Model 100 sounds alerting you to a ***CONNECT from OES Richmond. You reach down on the floor of the car and turn on the Hush-80 battery powered printer and open a Document File on the Model 100. Two minutes later you have your five messages stored and a hard copy of each (no garbles). You walk inside the Evacuation Center still cutting the printer paper apart and hand them to the clerk who is logging the traffic. When you return to your car, you see the message from the FEMA official waiting for you in the buffer. You send three copies of it to the printer and take those inside knowing that they will need some time to make arrangements to get the information before the Scouts leave the bus. You ask that they key it direct into another Model 100 so that you won't have to retype all those numbers (the center doesn't have a 100, but a reporter from the local paper does so they put her to work). The bus arrives and 20 minutes later you have a computer loaded with the information ready to send to OES. While waiting you test an alternate route to Richmond through North Anna Op Center and the K4ARO-1 packet repeater at Glen Allen since Fredricksburg is getting flaky. 7 p.m. and the pizza you ate a few minutes ago is making it difficult to keep your eyes open. . . 73 and see You on Packet.

GIL FREY, K4JST is very active in Packet. He is Net Manager for the 4RN/4. The Charles City County, Virginia resident is the local EC and has written several articles on Packet Radio in the past. (See separate story this issue by Gil about the "TNC".

ARRL Petitions Commission For More Novice Privileges

The ARRL has filed a Petition with the FCC for a Notice of Proposed Rule Making, requesting the rules be amended to expand operating privileges for Novice class Amateur licensees.

The idea is to give Novices more incentive to upgrade to higher classes of Amateur Licenses, and to encourage more young people into Amateur Ranks.

The League's petition recommends that Novices be allowed the following:

(1) Add limited Novice digital communications privileges, radio-teleprinter and packet radio on 10 meters, between 28.1 and 28.3 mhz, with A1A, J2A, F1B and J2B emissions (1200 baud maximum).

(2) Limited low-power SSB operation at 28.3-28.5 mhz, with anticipated minimal impact on other licensees. Type A1A, J2A and J3E emissions are proposed.

(3) Limited VHF-FM/Repeater privileges on 220-225 mhz, all voice and data modes (including radiotelegraphy), with a power limit of 25 watts output. Repeater operation controlled by Novices would not be permitted.

(4) A portion of the 1240 band, specifically 1246-1260 mhz. be made available to Novices, with a power limit of 5 watts.

The ARRL said in summary, "With the additional privileges proposed, the Novice class amateur license would become more attractive to newcomers to amateur radio, and more importantly, it will provide sufficient diversity of operating privileges to provide the entry-level licensee with an incentive to upgrade his or her license class and remain involved with amateur radio."

Remember the Old Newsreels?

— by Ted Wolfe, WD4KHL

Before television news became the force it is today in our lives we used to subscribe to the picture magazines such as LIFE and look forward to the movie theatre newsreels. Remember them?

If I remember correctly they changed the newsreels twice a week. If you're old enough you probably remember the Fox Movietone News, Pathes Paramount News, etc.

The subject came up recently in a QSO with Sam Moore, W8NCD, Charleston. Sam's family operates the S. Spencer Moore Company there and Sam runs the company's photo lab in a warehouse on Charleston's West side. I had heard of Sam years before I met him in person. I worked in commercial TV and Sam's name often came up when the subject of newsfilm processing came up. It was years later that I met him as a ham with an eveball QSO.

In earlier years when the TODAY show came to the area Sam processed a lot of their film for them and WSAZ.

In that recent QSO Sam recalled the only time he ever shot film which was used in a theatre newsreel release. I remembered the event, although neither of us can exactly place the year. We agree it was sometime around 1950.

The story was the crash of a National Guard plane at Kanawha Airport in Charleston which resulted in multiple deaths. I had attended high school with two of the guardsmen who were killed when their transport crashed while coming in for a landing.

The accident occurred during the Air Guard's annual training. One of their pilots was killed in a training accident at the out-of-state training base. His fellow airmen, still on active duty, were returning to Charleston to

Continued on Page 14

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M-8-85

QCWA National Convention Sked September 26, 27, 28

The Piedmont (N.C) Chapter #126, will host the 1985 Quarter Century Wireless Association National Convention in Winston-Salem, North Carolina on September 26-27-28. Attendance is expected to come from coast to coast.

The event will be held at the Hyatt Winston-Salem. The main banquet will be held Saturday night.

Among things of interest at the Convention will be: Open Forum with QCWA Officers and Directors, Sing-a-long with Leo Meyerson, Palmetto Chapter Breakfast and Banquet, with guest speaker, and other activities and tours of Old Salem, R.J. Reynolds Tobacco Co., Reynolda House and many other historic places in the area.

Persons wishing to attend should make their own room reservations at the Hyatt by writing: HYATT HOUSE, P.O. BOX 599, WINSTON-SALEM, N.C. 27102, or call (919) 725-1234 or (800) 228-9000. Be sure to mention QCWA when making reservation.

For registration for the Convention, please use the registration form below.

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QCWA 1985 NATIONAL CONVENTION
SEPTEMBER 26-27-28

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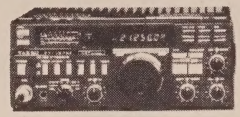

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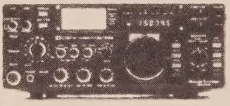

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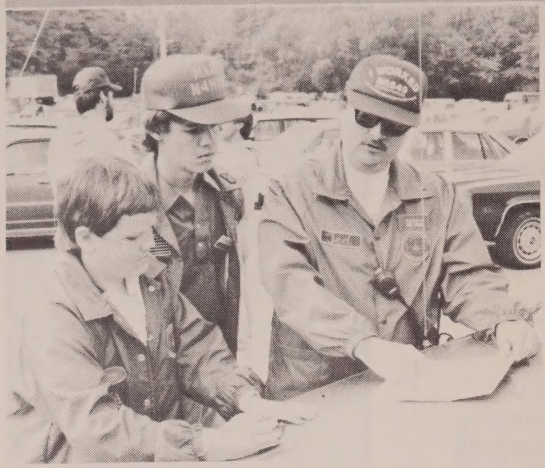
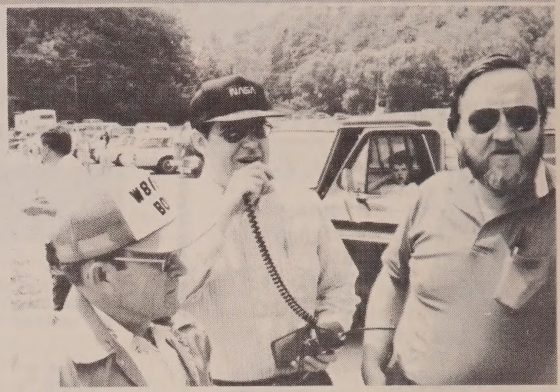
ERARC Covers Mountain Festival Marathon

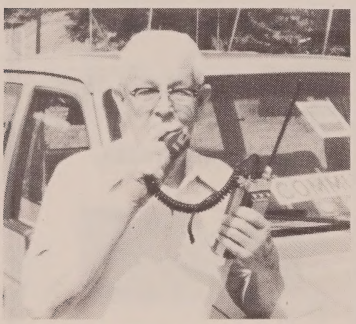


East River ARC members go over check point assignments. SHANE PERDUE, N8GKU, MARK WILLIAMS, N4HYN and TED GRIMM, WD8OGZ will be manning check points in the Mountain Festival Marathon.



BOB COOK, KA8MDZ, checks into the BR549 repeater getting ready for the Marathon. BOB MORTON, W8IHC and BILL (FUZ) FISHER, WA8RHT, East River ARC President look on.

COVER STORY



OTHO DIXION, K8ZDY ran communications from the Bluefield Police Department during the Mountain Festival Marathon.

BOB FRAZIER, WB8NRK synchronizes his clock and tunes his H/T with JIM PERDUE, KC8NG. BILL BOWLING, KA8EUX, watches the action, as the club makes preparations to provide communications for the 2nd Annual Mountain Festival Marathon at Bluefield.

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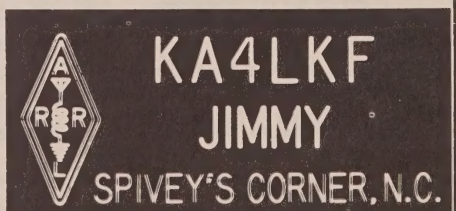

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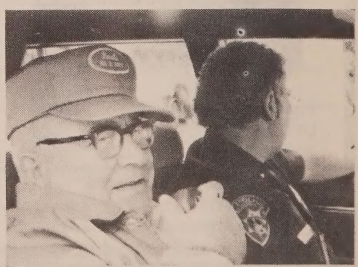

ERARC member WILLIE "BOOTS" WALTERS, KA8BNY provided liaison with the Bluefield Police Department during the Mountain Festival Marathon. Driving was JOE PULLANO of the Bluefield Police.

ERARC Members Tune Up For Marathon

"Bluefield Angels"?? Members of the ERARC Motorcycle patrol were on hand to patrol the course of the Mt. Festival Marathon at Bluefield. They helped provide emergency communications between points on the course. Lined up at the finish line are: BOB MORTON, W8IHC: DON (ANDY) ANDERSON, WD8OOR: BILL (FUZ) FISHER, WA8RHT and BOB FRAZIER, WB8NRK.

— Photos & Story by Don Williams, WA4K

The East River Amateur Radio Club in Bluefield, West Virginia, provided communications for the second annual Mountain Festival Marathon on Saturday, May 25, 1985.

Seventeen club members participating in the event, providing services which included communications at all split locations (checkpoints), patrolling the course for runners needing assistance, and liaison with law enforcement agencies, rescue squads, and the national guard.

Advantages of participating in this type of event are numerous, but perhaps the most important is traning of club members in emergency communications procedures. Field experience is probably the best method of training because it offers the most realistic conditions for such training, and a marathon or similar event provides an ideal situation. A secondary advantage is publicity for the club which provides the service. News coverage, both on TV and in other media can usually be very advantageous when handled properly.

ERARC Race Committee confers during the Mt. Festival Marathon. JIM PERDUE, KC8NG: TED GRIMM, WD8OGZ: SHANE PERDUE, N8GKU (back to Camera): DON (ANDY) ANDERSON, WD8OOR: and DON WILLIAMS, WA4K.

DON WILLIAMS, WA4K directs as ERARC provides communications for the 2nd Annual Mountain Festival Marathon at Bluefield, W. Va.

The Final Chapter (We Hope)

More on Tax Exemption for CVRA-SERA

— by Ray Adams, C.P.A., N4BAQ
Treasurer, CVRA-SERA

When Tennessee originally joined the Carolina-Virginia Repeater Association, Inc., Jean V. Giesler, W4TYU and I solicited enough written nominations from full members to nominate Sam B. Kirby, WB4HAP "from the floor" as Tennessee's first director, resulting in his election.

Well, after dark on the night of Saturday, September 5, 1981, the phone rang. It was Sam in Shelby at CVRA's annual meeting. The organization had major problems with IRS to the point that Carl Smith, N4AA had resigned as Treasurer, sending all corporate records and financial statements, through August 31, 1981, no less, to Shelby. Let me state here and now I most certainly am not in possession of any information, in written or verbal form, that could be the basis of any intelligent criticism of Carl. He simply didn't know where to turn!

Knowing that under certain circumstances, the officer(s) responsible for reporting to the IRS for a tax-exempt organization can be personally penalized $10.00 per day of delinquency until such reporting is satisfactorily accomplished, yet at the same time knowing I had been part of the cause for Sam to be where he was, I told him to "bring the stuff with you, we'll look at it and see what we can do". With Monday Labor Day, first thing Tuesday morning, I called the

Continued on Page 38

Remember Old Newsreels

Continued

participate in his funeral when their transport went down with disastrous results.

Sam related that the photographer who was the area stringer for Paramount News, knowing that Sam owned a 35-mm silent movie camera, contacted him to ask him to try to get some newsfilm coverage of the site. He gave Sam a 100-foot roll of film and left to try to reach the site on the ground.

Sam went to the airport where he found a pilot willing to fly over the crash site. Sam got his footage and the film was dispatched to New York. The Paramount stringer, incidentally, failed to get any film on the ground.

Sam said he went to the Virginian Theatre in Charleston, one affiliated with Paramount, several days later and was able to see the film he shot integrated into the other items on the newsreel. Sam said a friend later told him he saw the footage at a theatre in Japan. Although he got credit for shooting the film, Sam said he didn't get a penny for the effort.

I asked Sam if, by any chance, he might still have that old antique 35-mm hand held camera. He said he had run across it recently in storage in his garage. He promised to show it to me the next time I visit him. And he said he might even donate it to a movie museum somewhere.

It's fascinating the stories you can hear from fellow hams when you take the time to really converse.

220 Beacon Due On Air This Month

The first known 220 mhz. Beacon in the country should be coming on the air sometimes this month. The beacon to operate on 220.051 will be located in Mokena, Illinois.

The 220 beacon will be operating 24-hours a day and will I.D. the call of K9XI/B every minute. There will also be 5 messages in CW, rotating and broadcasting on the signal. The beacon will be on a vertical polorized antenna system at 90-feet. Power levels will vary from 25 watts to .2 watts.

Anyone copying the 220.051 mhz beacon should contact K9XI at his Callbook address.

ARRL National Convention

The 1985 ARRL National Convention will be held in conjunction with the Greater Louisville (Ky) Hamfest on October 4-6 at the Kentucky State Fairgrounds. Exhibits, manufacturers, special forums and many other features will be presented.

A Time To Reflect!

Continued from Page 1

only about 5 minutes from home. I can't tell you how nice and convenient this makes it for us when deadlines are bearing down. Frank and crew at Commercial Printers are doing a good job for us. And Linda is finally getting where she can tolerate my pickeyness and wierd typesetting requests.

Looking back in 1977, we were just 3 States in our organization. The repeater index was carrying about 150 different 2-meter repeaters, 14 repeaters on 220, nine 6-meter and 17 450-mhz repeaters, totaling about 190 repeaters. Today there are over 190 repeaters in North Carolina, or Tennessee alone.

Workers In CVRA

My Journal staff included: Buster as Publisher, Watson Gabriel, WB4EXW, Technical Editor; Ken Holiday, WA4DYY, Sales Manager; Lindsay Cleveland, W4IZI, Circulation Manager; and Bill Parris, K4GHR, Associate Editor.

Directors and Vice-Directors for CVRA in 1977 included: Charles Durst, WA4WTX and Eddie Sellars, W4NTQ for North Carolina; Wade Holland, W4AZT and Hugh Minton, K4FR for South Carolina; and Carter Cogle, K4ARO and Al Dyson, W4PDL for Virginia.

CVRA Officers included: Ed Alderman, WA4PEN, President; Calvin Dempsey, WA4UQC, Vice-President; Carter Cogle, K4ARO, Secretary, and Al Ross, K4CAW, Treasurer.

Other Committee Members included: Bill Page, WB4LWX, Repeater Membership, Lindsay Cleveland, Associate Membership; Herman Cone, III, WB4DBB, Frequency Coordination; and Dan McMillan, W4DGE, FCC Liaison Officer.

I know many of you recognize many of these names, some of which are still active in our organization. Others have moved on to other things of interest in Amateur Radio.

Equipment Back Them

I note from the August Repeater Journal some of the radio equipment advertising. Two meter equipment included the "new" WE-800, Wilson Synthesized portable ($399), Wilson 1405SM Handi Talkie ($192.95) ICOM IC-215 portable ($259), Kenwood TS-700A FM/SSB ($599) TR-7400A ($399). Another new radio just introduced was the Tempo VHF One Plus, with "new" lower price of $399. (You must remember that synthesized 2-meter radios were only 2 or 3 years old in 1977, and generally sold in the $450 price range.) KDK still had their FM144-10SXR-II (which had been out several years) at a reduced price of $389.

Perhaps the most exciting radio in that day was the new diode programmable (no crystals) ICOM IC-22S selling for $299. Other ICOM radios on 2-meters included the IC-245 mobile FM/SSB for $499 and The IC-211 (base type) all mode for $749. A company called Ancomm introduced an S-225 synthesized 2-meter radio but it lasted only a short time, and they never introduced any other radios on Amateur bands.

The big name in tuners in 1977 was Dentron. Everybody and anybody in those days who wanted a tuner got the Dentron.

In HF radios, the Kenwood TS-520 and TS-820 for $828 and $1048, respectively, was the going thing. (ICOM was not in the HF business at that time.) Tempo was running hot with their Model 2020 and Ten Tec had their Argonaut while Drake was continuing with their TR-4C line.

Handi talkies were few in 1977. None were synthesized except a few Motorola commercial jobs with synthesizer kits installed by Amateur experts. On the market were brands such as the Standard C-146, Wilson, 1402SM, Regency HRT-2 and the Tempo FMH. All handhelds were 5 or 6 channel crystal controlled and BIG! It would still be 2 years or more before ICOM shook up the 2-meter Handi talkie market, with a synthesized small radio for less than $300, the IC-2A/T.

It was also in 1977 that 220 mhz took hold in CVRA territory when our "friends" from Clegg, Cobra, and Midland began dumping their 220 rigs on the market. (The FCC had just killed for good the possibility of CB getting 220.)

Naturally the enterprising ham market snatched up these little $139 crystal controlled transceivers and began populating 220-mhz. (Incidentally, a good condition Clegg or Midland will bring more today on the used market than they actually sold for new in 1977.)

Future of the Journal

We folks, who publish the Repeater Journal, promise to continue to put forth our best effort to give you a first quality magazine, with appealing information of value to you and your friends. We hope you will continue to support our effort as you have in the past.

Eight Years! That's a long time on one job, but as long as you will have me, I'll continue doing the job as best as I can. Your comments good or bad are always welcome. After all, the Journal is YOUR magazine. We want you to share it with us!

Maybe eight years from now, you and I can both reflect back to how it was in 1985.

— Wayne C. Williams, Editor

AMATEUR OR PROFESSIOAL

Special to the Journal
— by Rick White, KB8BS

When the word amateur comes to my mind, it immediately brings forth a mental image of someone who is unskilled, a nonprofessional, a novice. **However, in many cases, an amateur can be someone who is highly skilled, very professional, and have an experience envied by professionals.** As an amateur radio operator, or otherwise commonly known as a "ham", I can testify to the skillful, professional, proficient qualifications of my fraternal brother and sister "hams."

An illustration of the skill many amateurs possess, recently made international news on a tiny, remote Caribbean island called Grenada. It was the amateur radio transmissions on October 25 and 26, 1983, coming from a frightened St. George's University medical student, who is also a amateur radio operator, KA2ORK, that gave the world the first live reports of the United States led invasion of the little island that many Americans had never heard of. By Mark Barettella's accurate reports of the student's condition, and the effects various military maneuvers were having on the students position, he actually aided United States troop movements and could have very well assisted in the saving of many American Soldiers lives.[1]

An organization within the amateur community known as "AMSAT" or amateur satellite, is actively and voluntarily involved in the research and development, building, and launching into space, communications satellites. To date, there have been ten satellites launched into space that have been financed entirely by contributions and dues from within the amateur radio fraternity. One can hardly vision an unskilled, individual building a communications satellite that functions flawlessly in space. These "amateurs", in addition to placing the satellite in space, are able to calculate orbit trajectory, and maneuver the satellite into position so that the battery charging solor cells are facing the sun. Highly un-amateur.

There is another facet of amateur radio that goes along with little attention from the general public, until a natural disaster such as a tornado, earthquake or a massive volcano eruption occurs. When something happens of this magnitude, all communications generally are knocked out in the disaster area. Then, the quiet, unassuming "amateurs" are called in by the Amateur Radio Emergency Service, to provide emergency and backup communications. One may wonder how this can be done when police, fire and other emergency services have typically the same type of equipment. Amateur's have developed many types of alternative power sources, such as solar power, wind power, and battery power to use in emergency situations.

A little known fact is that the first communication or warning as it was, that Mt. St. Helen was actually erupting, came from amateur operator, Reid Blackburn, KA7AMF on his handi-talkie while camping on the side of the mountain. The poor unfortunate amateur has never been heard from or seen again, a casuality of the violent forces of nature.[2] Instances such as this give much credit to the professionalism displayed by the "amateur" radio operator.

The expertise displayed by ham radio operators the world over is used nearly everyday, quietly being unnoticed, by professionals who call themselves, "amateurs". Of these individuals, I am extremely proud to be a kindred to.

[1]Carol L. Smith AJ2I,"Mark Barettella, KA2ORK - Grenada story," QST, December 1983, pp. 66 - 69, 80.
[2]John H. Brown W7CKZ and David Lievsay K7UUH, "Amateurs in the Thick of Volcano Action" QST, August 1980, p. 47.

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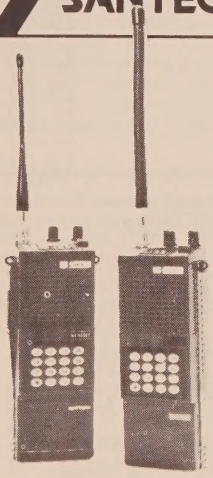

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440Mhz
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TS-530SP---160-10 METERS TUBE FINALS	749.95	649.00
TL-922A----160-10 METERS TUBE FINALS	1229.95	1050.00
R-2000-----COMMUNICATIONS RCVR	599.95	475.00
R-1000-----COMMUNICATIONS RCVR	499.95	399.00
R-600------COMMUNICATIONS RCVR	399.95	329.00
SP-430-----COMMUNICATIONS SPEAKER	41.95	39.00
SP-930-----COMMUNICATIONS SPEAKER	79.97	70.00
AT-250-----AUTO ANTENNA TUNER	329.95	290.00
PS-430-----HEAVY DUTY POWER SUPPLY 20A	149.95	135.00
MC-60A-----DELUXE STAND MIKE	79.95	70.00
MC-42S-----HAND MIKE	29.95	28.00
MA-5-------5 BAND HELICAL HF ANT 80-10 METERS	99.95	89.00
FM-430-----FM BOARD	49.95	47.00
TS-711A----2 METER ALL MODE 25 WATT AC/DC	799.95	676.00
TW-4000A---2 METER/70 CM FM DUAL BANDER 25 WATT	599.95	499.00
TR-7950----2 METER MOBILE 45 WATT	419.95	355.00
TM-211A----2 METER MOBILE 25 WATT TILT PANEL	369.95	312.00
SP-50------EXTERNAL MOBILE SPEAKER	29.95	27.00
MC-46------16 KEY AUTO PATCH UP/DOWN MIKE	49.95	47.00
KPS-12-----POWER SUPPLY FOR TR-7950 12A	94.95	85.00
SW-100A----SWR/PWR/VOLT METER	49.95	47.00
SW-200A----SWR/PWR/VOLT METER W/SWC-1	99.95	89.00
TR-2600A---2 METER HIGH TECH HAND-HELD	339.95	290.00
TH-21AT----2 METER POCKET SIZE HAND-HELD	229.95	190.00
ST-2-------STAND CHARGER FOR 2600A	89.95	85.00
PB-21------NI-CAD 180 MAH FOR TH21AT	19.95	17.95
PB-26------NI-CAD 450 MAH FOR 2600A	39.95	35.00
DC-21------DC ADAPTER FOR TH21AT	21.95	19.95
DC-26------DC ADAPTER FOR 2600A	21.95	19.95
SMC-30-----SPEAKER MIKE FOR HAND-HELDS	36.95	34.95
HMC-1------VOX HEADSET FOR HAND-HELDS	39.95	36.95
SC8T-------SOFT CASE W/BELT CLIP FOR TH21AT	12.95	10.00
SC9--------SOFT CASE W/BELT CLIP FOR 2600A	19.95	17.00
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The Glue That Keeps The Whole Thing Together

— Compiled by Wayne C. Williams, Editor

Imagine if you will, a Soccer Tournament. Your club has been asked to provide communications for them. Sounds like a regular Saturday exercise, doesn't it? . . Wrong!

If you want to get an idea what it's like to provide communications for the largest Soccer Tournament in the Southeastern part of the United States, just ask any member of the Greensboro Amateur Radio Association.

Dale Kelly, WD4CVM, has the task of getting together members of the club, sorting out schedules, and seeing that every point is covered.

How many points you might ask? How about over 20 points with station set-up for operation for two full days, early morning at late evening.

GARA members turn out in full force every year to provide vital communications for the "Wrangler Jeans/McDonald's Soccer Classic". Morris Jeffries, K4SNI serves a dual role. Aside from being a member of GARA, he is also the official Tournament Director for the Classic.

The Soccer Classic is held each year in Greensboro. The 1985 event held in May, had 308 Soccer teams competing on 43 playing fields in 19 different locations about the city of Greensboro, N.C. GARA had it covered through the K4SNI 01-61 repeater.

Kelly said the Amateurs are needed to pass scores, information, questions about rules from the 43 playing fields back to the headquarters point at UNC-G, where all Tournament officials are stationed. The Club operators have had to call for Emergency Vehicles when someone got sick or hurt, pass information about referees wanting to leave early, questions about game endings, questions about rules, allow Coaches to talk directly with Tournament officials, Referees clarify a rule point directly over the radio with officials and scores of other information. They coordinate helpers and ask for help when requested by officials at the various playing fields.

Some statistics from the tournament: Over 14,000 people involved in the Tournament. Over 1,700 motel rooms filled with out-of-town soccer players, parents and fans, 1,200 cars and buses from out-of-town. 307 soccer teams from nine states participating and the Greensboro Amateur Radio Association to keep it all straight on their communications net.

"We are a closely knit club", Dale Kelly said, "Our purpose is to provide public service to our community."

GARA also provides communications for the Diabetes Association Bike-A-Thon, the March of Dimes Walk-A-Thon and to other groups requiring reliable communications for their special services.

Do club members get tired of talking to each other all day on a formal net atmosphere.

"Not at all," said Dale, "We just might decide to go out and eat instead of going home, so sometimes we descend on a restaurant -- 25 at a time."

CVRA-SERA Annual Meeting At Shelby

The Annual meeting of CVRA-Southeastern Repeater Association, Inc. will be held Saturday night, August 31 at the Governor's Inn, Shelby, N.C.

The Board of Directors, officers, appointees are all encouraged to attend. ARRL and probably FCC officials will be on hand as in the past.

Full Members and Associate Members of CVRA-SERA are also invited to attend and provide input to the Board.

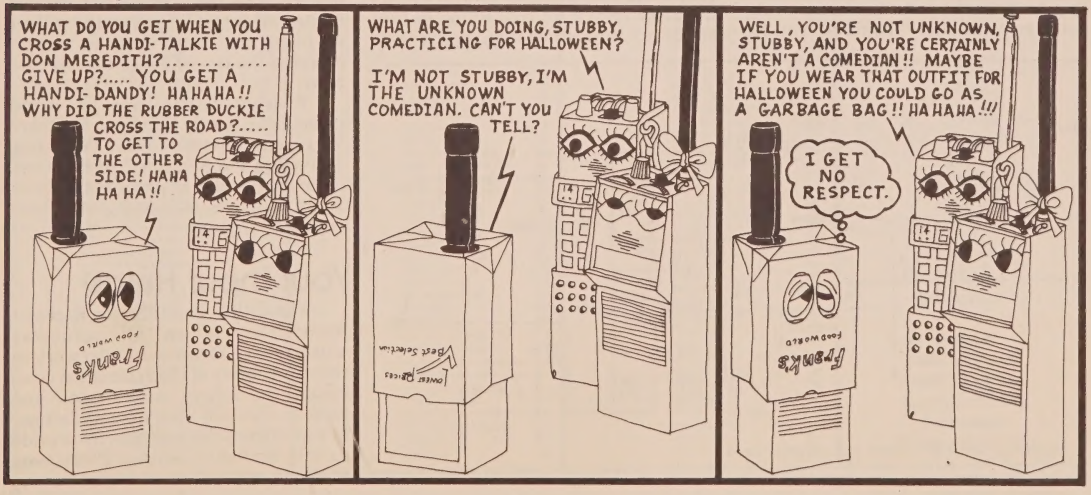
One of the main agenda items will be the choosing of a Nominating Committee to nominate new officers for the 1986-1987 term. CVRA-SERA officers hold office for two years, and are eligible for re-election. Officers elections are held on odd years, Directors & Vice-Directors elections on even years.

Several other topics are on the agenda which has not been sent to the Journal editor at press time. However, from the January meeting, additional comments will be heard on the 20 khz bandplan and what is happening across the country. More on packet radio frequencies for 220 mhz will also be discussed.

Directors and/or Vice Directors will give reports on the six Districts of CVRA-SERA. Associate and Full Membership reports will also be given.

Any CVRA-SERA member interested in attending, need only show up and they can be ushered into the meeting room by Restaurant staff members.

Stubby *by Fred Hurteau, WD4SKH*


WHAT DO YOU GET WHEN YOU CROSS A HANDI-TALKIE WITH DON MEREDITH?..... GIVE UP?..... YOU GET A HANDI-DANDY! HAHAHA!!
WHY DID THE RUBBER DUCKIE CROSS THE ROAD?..... TO GET TO THE OTHER SIDE! HAHA HA HA!!
WHAT ARE YOU DOING, STUBBY, PRACTICING FOR HALLOWEEN?
I'M NOT STUBBY, I'M THE UNKNOWN COMEDIAN. CAN'T YOU TELL?
WELL, YOU'RE NOT UNKNOWN, STUBBY, AND YOU'RE CERTAINLY AREN'T A COMEDIAN!! MAYBE IF YOU WEAR THAT OUTFIT FOR HALLOWEEN YOU COULD GO AS A GARBAGE BAG!! HAHAHA!!!
I GET NO RESPECT.

Technical — A Compression Amplifier For Your Repeater System

— by William S. Owen, WB4PZA

This circuit is designed to provide automatic gain control in the audio chain of repeater systems. It will provide a near-constant output for inputs varying as much as 20 dB. By placing the amplifier between the receiver's audio output and the transmitter's audo input, the repeater will compensate for differing speech levels and deviation received by the repeater.

CIRCUIT DESCRIPTION

(Refer to schematic diagram)

The audio signal is coupled into the amplifier through C1, R1, C2, R2, and R3. The first half of a LF353 op-amp amplifies the signal which is coupled to the output through R5 and C4. A portion of this signal is coupled to the second half of the op-amp through C3 and R6. The signal is again amplified and is used to drive a voltage doubler consisting of C6, D1, and D2. The rectified audio signal then charges C7 through R8. C7 discharges through R9 and the base-emitter path of Q1. As the signal level increases at the input of the amplifier, the voltage across C7 increases causing Q1 to conduct. The collector-emitter resistance of Q1 decreases, shunting some of the input signal to ground through C8. The opposite action takes place with a decrease in input level. R11 and R12 form a voltage divider to provide bias to the non-inverting inputs of the op-amps. D3 and D4 provide a 1.5-volt drop between the two ground returns in the circuit necessary to properly bias Q1.

CONSTRUCTION

The circuit can be wired together on a small piece of perfboard using insulated 30-gauge wire-wrap wire. Layout of the components is not critical, however some effort should be used to keep leads as short as possible when placing the components on the board. All resistors are ¼-watt, 5%; all coupling capacitors are mylar or ceramic disc (values on the diagram are in uF); and all bypass capacitors are tantalum except for C11 which is electrolytic. Capacitor C7 is also electrolytic (note polarity). Potentiometers R1 and R5 are linear taper PC-mount type.

INSTALLATION

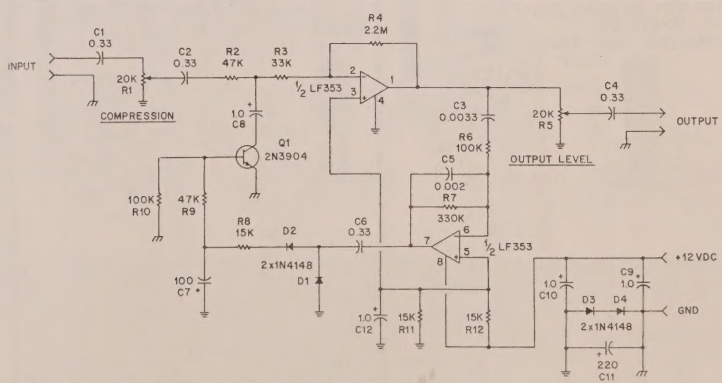
The amplifier can be placed anywhere in the audio chain where there is about 1 volt of audio. For best operation, it should be connected in the receiver after de-emphasis and before the squelch. By connecting the amplifier before the squelch, the receiver noise (no RF signal) will prevent the amplifier from going to full gain during receiver squelched condition. Although the amplifier has a fast attack time (0.5 seconds), a noticeable "pump" will occur when audio is first applied after a period of no input (this condition would occur if the amplifier is connected at a point where audio is squelched). A regulated +12 volts DC should be used to power the amplifier. If the power supply has a tendency to bounce when the repeater keys, a limit resistor and a zener (9 or 10 volt) should be used to regulate the voltage to the amplifier.

SETUP

There are only two adjustments in the circuit: Compression (input) and Output Level. Set the Compression control at midrange and adjust the Output Level to achieve the same transmitter deviation prior to installing the amplifier (use an oscilloscope to check the audio level at the point you are planning to connect the amplifier and adjust the Output Level control to get the same level after connecting in the amplifier). Now adjust the Compression control by listening to various signals coming into the repeater (get a roundtable going) to achieve the amount of automatic leveling desired. Note that the release time (the time it takes for the amplifier to increase gain) is slow (5 to 10 seconds). This delay keeps "pumping" to a minimum during normal conversation.

ADDITIONAL TIPS

If you desire a faster (slower) attack time, then decrease (increase) the value of R8. If you desire a faster (slower) release time, then decrease (increase) the value of R9. Different values of C5 can be substituted to change the amplifier's reaction to different frequencies; e.g., decreasing the value of C5 will make the amplifier more responsive to the high frequency content of the input signal. Also, by increasing (decreasing) the ratio R7/R6 you can decrease (increase) the maximum available output level with an increase (decrease) in maximum available compression. If you want to increase the output level, be careful to avoid clipping the audio signal with too much input.



COMPRESSION AMPLIFIER APR85 WILLIAM S. OWEN / WB4PZA

CVRA News Net Shuts Down For Summer

The CVRA News Net has shut down for the summer. It will return on Wednesday Night, September 4th at 8:30 p.m.

Wayne C. William, K4MOB, said he is looking forward to getting the strictly news program back on line in September. The break gives Wayne a breather from conducting the net every week.

Any repeater owners which would like to carry the CVRA News Net are invited to contact Wayne and he will see if there are any systems nearby carrying the net which can be used for relay.

Presently the net is aired throughout North Carolina, Southern Virginia, Eastern West Virginia, Tennessee and Kentucky. At this time, there are no relay systems available for South Carolina, but some groups have expressed interest.

Your Input Helps!

The CVRA-SouthEastern Repeater Association is an all volunteer organization. Those of us who work in the many facets of the association do so because we believe in its purpose and method. Our only salary is satisfaction. Remarks from the membership provide us with our fuel to continue. Please keep them up.

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DISTRIBUTION OF REPEATERS BY FREQUENCY

The By-City Index Appears On Following Pages

2 METERS

5.01 /PKET	ANDERSON/SAS MT	SC
	FLORENCE	SC
	SHORT MT	TN
5.33 /PKET	MEMPHIS	TN
6.50 /2.525	CLARKSBURG	WV
7.43 /4.93	LYNCHBURG	VA
4.51 /5.11	AUGUSTA	GA
	DECATUR	GA
	COLUMBIA	NC
	SAURATOWN MT	NC
	MYRTLE BEACH	SC
	KNOXVILLE	TN
	RICHMOND	VA
	SALT ROCK	WV
4.53 /5.13	NEWNAN	GA
	AHOSKIE	NC
	GREENWOOD	SC
	GREENWOOD/HODGES	SC
	CHATTANOOGA-RTTY	TN
	LAFOLLETTE	TN
	GALAX/LKOUT MT	VA
4.55 /5.15	ATLANTA/GA TECH	GA
	MILLEDGEVILLE	GA
	MAYODAN	NC
	MORENTN/HI PK	NC
	DECATUR-PONE KB	TN
	FRANKLIN	TN
	MARMET/BEE MT	WV
	MARTINSBURG	WV
4.57 /5.17	NEWTON	NC
	OXFORD	NC
	LENOIR CITY	TN
	MURFREESBORO	TN
	BOLT MT	WV
4.59 /5.19	PIKEVILLE	EKY
	MT MITCHELL	NC
	JASPER	TN
	WHEELING	WV
4.61 /5.21	RIVERDALE	GA
	LEWISVILLE	NC
	TRENTON	NC
	GASTON	SC
	KNOXVILLE	TN
	MUFREESBORO	TN
	KILMARNOCK	VA
	HUNTINGTON	WV
4.63 /5.23	MIDDLESBORO	EKY
	DALTON	GA
	CHARLOTTE	NC
	MCMINNVILLE	TN
	BEDFD/APL ORCH	VA
	LOGAN	WV
4.65 /5.25	DALTON	GA
	GREENSBORO	NC
	CHARLESTON	SC
	FISHERVILLE	TN
	NASHVILLE	TN
4.67 /5.27	HENDSVL/PINCK MT	NC
	RALEIGH	NC
	HENDERSONVILLE	TN
	SHIELDS MT	TN
	MANASSAS	VA
	CRAIGSVILLE	WV
4.69 /5.29	PRESTONSBURG	EKY
	CHARLOTTE	NC
	CHATTANOOGA	TN
	PEGASUS	TN
	CHESAPEAKE	VA
4.71 /5.31	ROANOKE RAPIDS	NC
	ROCK HILL	SC
	ATHENS	TN
	JACKSON	TN
	ALEXANDRIA	VA
	LAYLAND/MANN MT	WV
4.73 /5.33	WILLIAMSTON	EKY
	MT AIRY/TRNR MT	NC
	BAMBERG	SC
	CHATTANOOGA	TN
	CUMBERLAND CTY	TN
	KNOXVILLE	TN
	PARSONS	WV
4.75 /5.35	HARLAN	EKY
	DECATUR	GA
	ROSSVILLE	GA
	CHARLOTTE	NC
	GREENVILLE	NC
	NASHVILLE	TN
	BLAND	VA
	FALLS CHURCH	VA
4.77 /5.37	AUGUSTA	GA
	N. WILKESBORO	NC
	KNOXVILLE	TN
	BECKLEY	WV
4.79 /5.39	GRIFFIN	GA
	MONROE	NC
	RALEIGH	NC
	CHATTANOOGA	TN
	GREENEVILLE	TN
	HERMITAGE	TN
	STANTONVILLE	TN
	GALAX	VA
	WESTON	WV
4.81 /5.41	ATLANTA/BELL	GA
	HIGH POINT	NC
	WILLIAMSTON	NC
	GREENEVILLE	TN
	MEMPHIS	TN
	LIBERTY	WV
4.83 /5.43	SPARTA/GREEN MT	NC
	COLUMBIA	SC
	KNOXVILLE	TN
	RICHMOND	VA
	CHARLESTON	WV
	MORGANTOWN	WV
4.85 /5.45	CROWDERS MT	NC
	DURHAM	NC
	NEWPORT	NC
	BENTON	TN
	SPRING HILL	TN
	WELCH	WV
4.87 /5.47	ROSWL/SWEAT MT	GA
	LILLINGTON	NC
	SAUROTOWN MT	NC
	INMAN	SC
	KNXVL/HOUSE MT	TN
	MOUNTAIN CITY	TN
	NASHVILLE	TN
	ARLINGTON	VA
	KINGSTON/LICK KB	WV
4.89 /5.49	AUGUSTA/MARTINEZ	GA
	MARIETTA	GA
	FRANKLIN	NC
	RALEIGH	NC
	RKY RDG/WALLACE	SC
	MCMINVL/SHT MT	TN
	MEMPHIS	TN
	BLUEFIELD	VA
6.625/6.025	MARTIN	TN
6.655/6.055	BROWNSVILLE	TN
6.685/6.085	WAVERLY	TN
6.895/6.295	HARTWELL	GA
6.01 /6.61	GREENSBORO	NC
	NEW BERN	NC
	CHELSEA	SC
	GRNVLE/CSRS HD	SC
	MYRTLE BEACH	SC
	CHATTANOOGA	TN
	NASHVILLE	TN
	BROMLEY MT	VA
	CHESAPEAKE	VA
	LYNCHBURG	VA
	SPENCER	WV
6.025/6.625	LAURINBURG	NC
	NEW MARKET	VA
	HERNDON	WV
6.04 /6.64	PINEVILLE	EKY
	AUGUSTA	GA
	HENDERSONVILLE	NC
	RALEIGH	NC
	WINSTON-SALEM	NC
	SUMTER	SC
	CROSSVILLE	TN
	MEMPHIS	TN
	NASHVILLE	TN
	FINCASTLE	VA
	MARION	VA
	RICHMOND	VA
	BUCKHANNON	WV
	HUNTINGTON	WV
6.055/6.655	CONCORD/KANNAP.	NC
	ELIZABETH CITY	NC
	SIGNAL MT	TN
	ALEXANDRIA	VA
	ALTAVISTA	VA
6.07 /6.67	HAZARD	EKY
	GAINESVILLE	GA
	BURLINGTON	NC
	CHERRY MT	NC
	MT PLEASANT	SC
	BRISTOL	TN
	COOKEVILLE	TN
	LAFOLLETTE/WMT	TN
	NASHVILLE S.W.	TN
	BARREN SPRINGS	VA
	LEXINGTON	VA
	WILLIAMSBURG	VA
	RAVENSWOOD	WV
6.085/6.685	GRIFTON	NC
	STATESVILLE	NC
	NEWBERRY	SC
	VIENNA	VA
6.10 /6.70	GRAYSON	EKY
	DUNN	NC
	GREENVILLE	SC
	LANCASTER	SC
	FRAYSER	TN
	MANCHESTER	TN
	DANVILLE/WHT OAK	VA
	DUFFLD/POWLL MT	VA
	NORFOLK	VA
	STAUNTON	VA
	RAVENSWOOD	WV
6.115/6.715	SPRING LAKE	NC
	BLACKSBURG	VA
	STERLING	VA
	SHERRARD	WV
6.12 /6.72	ST ALBANS/COAL	WV
6.13 /6.73	LOUISA	EKY
	SWEAT MT	GA
	RALEIGH	NC
	SALISBURY	NC
	WILMINGTON	NC
	N. AUGUSTA	SC
	SIMPSONVILLE	SC
	KNXVL/ENG MT	TN
	LEBANON	TN
	MEMPHIS	TN
	HAMPTON	VA
	ALDSN/KENEY MT	WV
6.145/6.745	DILLON/PEE DEE	SC
	DYERSBURG	TN
	ROANOKE/POOR MT	VA
6.16 /6.76	ASHVL/MT PISGAH	NC
	GREENSBORO	NC
	SWANSBORO	NC
	WILSON	NC
	CHARLESTON	SC
	FT JACKSON	SC
	BRISTOL/HLSTN MT	TN
	NASHVILLE	TN
	CHARLOTTESVILLE	VA
	FOREST	VA
	HUNTINGTON	WV
	MORGANTOWN	WV
	WHEELING	WV
6.175/6.775	CHARLOTTE/RTTY	NC
	ELIZABETHTOWN	NC
	PULASKI/MUS MT	TN
	WYTHEVILLE	VA
6.19 /6.79	NEWNAN	GA
	CLINTON	NC
	SAURATOWN MT	NC
	ANDERSON/SAS MT	SC
	CHARLESTON	SC
	CHATTANOOGA	TN
	JOHNSON CITY	TN
	NASHVILLE	TN
	CHESAPEAKE	VA
	FAIRFAX	VA
	OAK HILL	WV
6.205/6.805	FAYETTEVILLE	NC
	GASTONIA	NC
	COVINGTON	VA
7.405/6.805	MAGGIE VALLEY	NC
6.22 /6.82	ATLANTA	GA
	ROARING GAP	NC
	WILMINGTON	NC
	GRNVLE/PARIS MT	SC
	LAKE CITY	TN
	MEMPHIS	TN
	WINCHESTER	TN
	WINCHESTER	VA
	CHARLESTON	WV
	CLARKSBURG	WV
6.235/6.835	ASHEVILLE	NC
	NAGS HEAD/BODIE	NC
	WADESBORO	NC
	HAZEL MT	VA
7.435/6.835	HIGH POINT	NC
6.25 /6.85	PIKEVILLE	EKY
	WARNER ROBINS	GA
	GOLDSBORO	NC
	HICKORY/BRT. MT	NC
	REIDSVILLE	NC
	FLORENCE	SC
	LAURENS	SC
	GTLBG/COVE MTN	TN
	MEMPHIS	TN
	NASHVILLE	TN
	PORTSMOUTH	VA
	STAUNTON	VA
	BKLY/FLAT TOP MT	WV
	BUCKHANNON	WV
6.265/6.865	FAYETTEVILLE	TN
7.465/6.865	WAXHAW	NC
6.28 /6.88	PRESTONSBURG	EKY
	SAVANNAH	GA
	RALEIGH	NC
	SHELBY	NC
	COLUMBIA	SC
	BRISTOL	TN
	MEMPHIS	TN
	NASHVILLE	TN
	OAK RIDGE	TN
	BRISTOL	VA
	RICHMOND	VA
	SALEM	VA
	CHARLESTON	WV
6.295/6.895	MADISON	NC
	WAXHAW	NC
6.30 /6.90	FAIRMONT	WV
6.31 /6.91	MOREHEAD	EKY
	AHOSKIE	NC
	ASHVL/SPIVEY MT	NC
	FAYETTEVILLE	NC
	LEXINGTON	NC
	WHITE HALL	SC
	SAVANNAH	TN
	SHORT MTN	TN
	FARMVILLE	VA
	JONESVILLE	VA
	MT. LK/BALD KNB	VA
	TYSONS CORNER	VA
	FAIRMONT	WV
	MCMECHEN	WV
	RIPLEY	WV
6.325/6.925	ROCK HILL	SC
	CHARLOTTESVILLE	VA
	DANVILLE(DCC)	VA
6.34 /6.94	ASHLAND	EKY
	BURGAW	NC
	CHARLOTTE	NC
	DURHAM	NC
	MANTEO	NC
	MT AIRY-RTTY	NC
	COLUMBIA	SC
	GREENVILLE	SC
	N. AUGUSTA	SC
	KNOXVILLE	TN
	MEMPHIS	TN
	NASHVILLE	TN
	HAMPTON	VA
	RICHMOND	VA
	ROANOKE	VA
	NEW MARTINSVLLE	WV
	RICHWOOD	WV
	WEIRTON	WV
6.355/6.955	ROCKINGHAM	NC
6.37 /6.97	SAVANNAH	GA
	MT AIRY	NC
	SMITHFIELD	NC
	ANDERSON	SC
	FLORENCE	SC
	ALTAMONT	TN
	KNGSPT/BAYS MT	TN
	MEDINA	TN
	OAK RIDGE	TN
	MANASSAS	VA
	STAUNTON	VA
	VIRGINIA BEACH	VA
	LOGAN/WARD RK MT	WV
	PARKERSBURG	WV
6.385/6.985	AUGUSTA	GA
	ALBEMARLE	NC
	OLD FORT	NC
	ROANOKE/POOR MT	VA
6.40 /7.00	HIGH POINT	NC
	JACKSONVILLE	NC
	MARION	SC
	PICKENS	SC
	MEMPHIS	TN
	SUFFOLK	VA
	ST ALBANS	WV
7.60 /7.00	ELKHORN CITY	EKY
	HIGH POINT	NC
	BLOUNTVILLE	TN
	CHATT/SIGNAL MT	TN
	CLARKSVILLE	TN
	TERRA ALTA	WV
7.615/7.015	LK NORMN/CLT	NC
	SUMTER	SC
	NASHVILLE	TN
	UNION CITY	TN

Listings For

Virginia
West Virginia
North Carolina
South Carolina
Tennessee
Eastern Kentucky

REPEATERS BY FREQUENCY CONTINUED

	FREDRICKSBURG	VA
6.43 /7.03	ROCK HILL	SC
	LEXINGTON	TN
	MILLINGTON/NB	TN
	RICHMOND	VA
7.63 /7.03	GREENSBORO	NC
	ROANOKE RAPIDS	NC
	BARNWELL	SC
	MYRTLE BEACH, N	SC
	FAYETTEVILLE	TN
	MEMPHIS	TN
	MORRISTOWN	TN
	WAYNESBORO	VA
	MULLENS	WV
	ST MARYS/BENS R	WV
6.445/7.045	FAYETTEVILLE	NC
	HOPE MILLS	NC
	ROBBINSVILLE	NC
	YOUNGSVILLE	NC
	ARLINGTON	VA
7.645/7.045	STATSVL/ASBRY MT	NC
	LEBANON	TN
	RADFORD	VA
	STAUNTON/EL. KB	VA
	VIRGINIA BEACH	VA
6.06 /7.06	MADISON	WV
6.46 /7.06	CHARLOTTE	NC
	MEMPHIS	TN
	SOUTH BOSTON	VA
	PRINCETON	WV
7.66 /7.06	ROSWELL	GA
	MACO	NC
	SUMTER	SC
	GRNVLE/GRYSTN	TN
	SHELBYVILLE	TN
	CHESTERFLD CO	VA
	POINT PLEASANT	WV
6.475/7.075	BURLINGTON	NC
7.675/7.075	LANIER MT/SNLV	GA
	BURLINGTON	NC
	GOOSE CREEK	SC
	KNOXVILLE	TN
	WAYNSBR/AFTON MT	VA
7.69 /7.09	PAINTSVILLE	EKY
	GREENVL/ESTN NC	NC
	ORANGEBURG	SC
	SPARTANBURG	SC
	SPARTA/BON AIR	TN
	GALAX/BRIRP MT	VA
7.705/7.105	BLAIRSVILLE	GA
	MARION/BEAR WLW	NC
	MONROE/UCARS	NC
	NASHVILLE	TN
	BEDFORD	VA
6.09 /7.11	LOGAN	WV
7.72 /7.12	WINCHESTER	EKY
	AUGUSTA	GA
	CEDARTOWN	GA
	GAST/SPCR MT	NC
	ROCKY MOUNT	NC
	MYRTLE BEACH	SC
	MEMPHIS	TN
	OAK RIDGE	TN
	CULPEPPER	VA
	BRIDGEPORT	WV
	DUNBAR	WV
7.735/7.135	DALTON	GA
	BREVARD/TRNS CTY	NC
	CHERAW	SC
	GALAX/FRIES	VA
	RICHMOND	VA
7.745/7.145	MT. STERLING	EKY
7.75 /7.15	ALBANY	GA
	CUMMING/SAWNEE	GA
	MORGANTON	NC
	RALEIGH	NC
	MONCKS CORNER	SC
	SIMPSONVILLE	SC
	MEMPHIS	TN
	NASHVILLE	TN
	OAK RIDGE	TN
	TAZEWELL	VA
	ST ALBANS/COAL	WV
7.765/7.165	HIGH POINT	NC
	GREENWOOD	SC
	NEWPORT NEWS	VA
	WARRENTON	VA
7.78 /7.18	BALDWIN	GA
	SANFORD	NC
	WILMINGTON	NC
	FT MILL/CAROWND	SC
	GOOSE CREEK	SC
	CLEVELAND	TN
	MEMPHIS	TN
	NASHVILLE	TN
	DUBLIN	VA
	PETERSBURG	VA
	LEON	WV
7.795/7.195	LAKE TOXAWAY	NC
	LYNCHBURG	VA
7.81 /7.21	DALTON	GA
	GREENSBORO	NC
	WHITEVILLE	NC
	LITTLE MT.	SC
	COOKEVILLE	TN
	JACKSON	TN
	MCLEAN	VA
	WISE/HIGH KNOB	VA
7.825/7.225	HILLSBOROUGH	NC
	MORRISTOWN	TN
	YORKTOWN	VA
7.84 /7.24	ASHLAND	EKY
	CARTHAGE	NC
	EDEN/MAYODAN	NC
	FOREST CITY	NC
	FRANKLIN	NC
	HILTON HEAD	SC
	LANCASTER	SC
	PROSPERITY	SC
	GALLATIN	TN
	MEMPHIS	TN
	PETERSBURG	VA
	WOODBRIDGE	VA
7.855/7.255	ASHEBORO	NC
	HENDSVL/STONE MT	NC
	ACCOMAC	VA
	MARTINSBURG	WV
7.885/7.255	DONELSON	TN
7.87 /7.27		
	PIKEVILLE	EKY
	BENSON	NC
	WAYNESVILLE	NC
	CHARLESTON	SC
	SENECA/LONG MT	SC
	GALLATIN	TN
	JOHNSON CITY	TN
	GUM SPRING	VA
	SCOTT DEPOT	WV
7.885/7.285	AIKEN	SC
	ROCKY SPUR	SC
	PIKEVILLE	TN
	MARTINSVILLE	VA
7.90 /7.30	JACKSONVILLE	NC
	LUMBERTON	NC
	TUCKASEGEE	NC
	CHARLESTON	SC
	KNOXVILLE	TN
	MEMPHIS	TN
	NASHVILLE	TN
	CLIFTON FORGE	VA
	FRANKLIN	VA
	WINCH/BLUEMONT	VA
	HARRISVILLE	WV
	HUNTINGTON	WV
7.915/7.315	UNION CROSS	NC
	HENDERSONVILLE	TN
	ALEXANDRIA	VA
7.92 /7.32	GRUNDY	VA
7.93 /7.33	TOCCOA	GA
	FAYVLLE/FT BRAGG	NC
	LENOIR/HIBRITN	NC
	COLUMBIA	SC
	COVINGTON	TN
	CROSSVILLE	TN
	NASHVILLE	TN
	LEXNGTN/COLE MT	VA
	WARSAW	VA
7.945/7.345	LYNCH/BLACK MT	EKY
	SHELBY	NC
	WASHINGTON	NC
	HENDERSONVILLE	TN
	GATE CITY	VA
	FRANKLIN	WV
7.95 /7.35	DANVILLE	VA
7.96 /7.36	DOUGLASVILLE	GA
	BOONE/RICH MTN	NC
	LUMBERTON	NC
	KNXVL/CROSS MT	TN
	MEMPHIS	TN
	NASHVILLE S.	TN
	PARIS	TN
	CHESTERFIELD	VA
7.975/7.375	BURNSVILLE	NC
	GREENVILLE	NC
	GEORGETOWN	SC
	HILLSVILLE	VA
	LYNCHBURG	VA
	NEWPORT NEWS	VA
	GRAFTON	WV
	ST ALBANS	WV
7.99 /7.39	JENKINS	EKY
	CHARLOTTE	NC
	EDEN/STONEVILLE	NC
	SMITHFIELD	NC
	LEXINGTON	SC
	DAYTON/RHEA CTY	TN
	GALLATIN	TN
	MADISON	VA
	PETERSBURG	VA
	PARKERSBURG	WV
6.19 /7.51	MEMPHIS	TN
7.135/7.735	ALAMO	TN
7.225/7.825	ATHENS	GA
7.285/7.885	BIRMINGHAM(ALA)	TN
7.30 /7.90	MONROE	NC
7.315/7.915	DALTON	GA
	ELLIJAY	GA
6.355/7.955	EAST RIVER MNT	WV
7.375/7.975	ATHENS	GA
	GREENVILLE	SC
5.23 /ET	HAMPTON	VA

220 MHZ

2.12 /3.72	STERLING PK	VA
2.30 /3.90	COLUMBIA	SC
	HERMITAGE	TN
2.32 /3.92	HIGH POINT	NC
2.34 /3.94	ASHLAND	EKY
	ASHVL/MT PISGAH	NC
	HILLSBOROUGH	NC
	CLARKSVILLE	TN
	MEMPHS/FRAYSER	TN
2.36 /3.96	ROCKY MOUNT	NC
2.38 /3.98	LINWOOD	NC
	GALLATIN	TN
2.40 /4.00	LOCUST	NC
	PETERSBURG	VA
2.42 /4.02	FAYETTEVILLE	NC
	HICKORY	NC
	NASHVILLE	TN
2.46 /4.06	EASLEY/SASFRS MT	SC
2.48 /4.08	NASHVILLE	TN
2.50 /4.10	FAIRFAX	VA
2.52 /4.12	LEXINGTON	SC
2.54 /4.14	PICKENS/CSRS HD	SC
	FRANKLIN	TN
	HUNTINGTON	WV
2.56 /4.16	LENOIR/HIBRITN	NC
2.60 /4.20	MOORESBORO	NC
2.62 /4.22	NASHVILLE	TN
2.64 /4.24	HENDERSONVILLE	NC
2.70 /4.30	STATESVILLE	NC
2.74 /4.34	GALAX/PT LKOUT	VA
2.80 /4.40	CHARLT/MINT HL	NC
2.86 /4.46	KNOXVILLE	TN
2.88 /4.48	N. WILKESBORO	NC
2.90 /4.50	KNOXVILLE	TN
2.94 /4.54	MT MITCHELL	NC
2.98 /4.58	PIKEVILLE	EKY
3.00 /4.60	ASHEVILLE	NC
3.04 /4.64	RALEIGH	NC
	WINSTON-SALEM	NC
3.08 /4.68	LK NORMN/CLT	NC
3.10 /4.70	WSTFLD/SAUTN MT	NC
3.12 /4.72	TYSONS CORNER	VA
3.14 /4.74	KINGSTON/LICK KB	WV
3.16 /4.76	SALISBURY	NC
	DAN/WHT OAK	VA
3.18 /4.78	CHATTANOOGA	TN
3.20 /4.80	MORGANTON	NC
3.22 /4.82	GIBSONVILLE	NC
	KNOXVILLE	TN
	ALEXANDRIA	VA
3.28 /4.88	DALTON	GA
	WSTFLD/SAUTN MT	NC
3.30 /4.90	COLUMBIA	SC
	CHATT/SIGNAL MT	TN
3.32 /4.92	CHAPEL HILL	NC
3.34 /4.94	ROSSVILLE	GA
	GREENEVILLE	TN
	ROANOKE/POOR MTN	VA
3.36 /4.96	CHERRYVILLE	NC
	GOLDSBORO	NC
3.38 /4.98	FALLS CHURCH	VA

440 MHZ

4.25 /1.25	MT MITCHELL	NC
9.25 /1.25	LEXINGTON	SC
	LEWISVILLE	NC
	NORFOLK	VA
	ALEXANDRIA	VA
	SHELBY	NC
	SUMTER	SC
	CHATT/SIGNAL MT	TN
7.00 /2.00	PICKENS/CSRS HD	SC
	WINCHESTER	VA
7.05 /2.05	MORGANTON	NC
	MEDINA	TN
7.10 /2.10	MILAN	TN
7.25 /2.25	COVINGTON	VA
7.50 /2.50	KNOXVILLE	TN
	ROANOKE/POOR MT	VA
7.70 /2.70	ROANOKE	VA
7.75 /2.75	ROANOKE	VA
7.80 /2.80	FRANKLIN	TN
	MEMPHIS	TN
7.90 /2.90	HIGH POINT	NC
8.00 /3.00	CHATSWORTH	GA
	COLUMBIA	SC
	MEMPHIS	TN
8.10 /3.10	LYNCH/BLACK MT	EKY
8.30 /3.30	GATLBG/COVE MT	TN
8.40 /3.40	MEMPHIS	TN
8.50 /3.50	SAURATOWN MT	NC
	PARIS/GROVE HL	TN
	TYSONS CORNER	VA
8.55 /3.55	WILKESBORO	NC
8.60 /3.60	MT MITCHELL	NC
8.65 /3.65	HAMPTON	VA
8.70 /3.70	LOCUST	NC
8.75 /3.75	ALAMO	TN
	FINCASTLE	VA
8.30 /3.80	MANASSAS	VA
8.80 /3.80	NORTHWEST/SE VA	VA
8.875/3.875	CHAPEL HILL	NC
	CAESARS HEAD	SC
8.90 /3.90	GRIFFIN	GA
	SALUDA	VA
8.95 /3.95	CHARLT/MINT HL	NC
	WILLIAMSBURG	VA
9.00 /4.00	HICKORY	NC
	RICHMOND	VA
9.05 /4.05	WAYNSBR/AFTON MT	VA
8.10 /4.10	FAYETTEVILLE	TN
9.10 /4.10	DURHAM	NC
	COLUMBIA	SC
	CHATTANOOGA	TN
	MEMPHIS	TN
9.15 /4.15	ATLANTA/BELL	GA
	N. AUGUSTA	SC
	LEXNGTN/COLE MT	VA
	SPRINGFIELD	VA
9.20 /4.20	AHOSKIE	NC
	MORRISTOWN	TN
9.25 /4.25	HENDERSONVILLE	NC
	CHARLOTTESVILLE	VA
9.30 /4.30	NEWTON	NC
	FISHERVILLE	TN
	HOOVER(ALA)	TN
	KNOXVILLE	TN
	WAYNESBORO	VA
8.35 /4.35	N. WILKESBORO	NC
9.35 /4.35	GALLATIN	TN
	APPLE ORCH MT	VA
9.40 /4.40	FAYETTEVILLE	NC
	OAK RIDGE	TN
9.45 /4.45	GALLATIN	TN
	FALLS CHURCH	VA
9.50 /4.50	LEXINGTON	NC
	MEMPHIS	TN
	LYNCHBURG	VA
9.55 /4.55	RIVERDALE	GA
	NASHVILLE	TN
	ALBERTA	VA
9.60 /4.60	CHARLOTTE	NC
	KNOXVILLE	TN
	ALEXANDRIA	VA
9.65 /4.65	WILLIAMSTON	NC
	GREENEVILLE	TN
	RICHMOND	VA
9.675/4.675	NASHVILLE	TN
9.70 /4.70	ROCKY MOUNT	NC
	WILMINGTON	NC
	MT PLEASANT	SC
	KNOXVILLE	TN
	MORGANTOWN	WV
9.735/4.735	DALTON	GA
9.75 /4.75	ROCK HILL	SC
	TYSONS CORNER	VA
9.775/4.775	NASHVILLE	TN
9.80 /4.80	GREENVILLE	NC
	MEMPHIS	TN
	LICK KNOB	WV
	MORGANTOWN	WV
9.825/4.825	STAUNTON	VA
9.85 /4.85	CHARLOTTE	NC
	PETERSBURG	VA
9.875/4.875	MT PISGAH	NC
	NASHVILLE	TN
8.90 /4.90	CHESAPEAKE	VA
9.90 /4.90	ASHVL/MT PISGAH	NC
	FAYETTEVILLE	NC
	GREENSBORO	NC
	WILSON	NC
9.95 /4.95	SUMTER	SC
	STAUNTON	VA
	VIRGINIA BEACH	VA
9.975/4.975	SAURATOWN MT	NC
	NASHVILLE	TN
3.80 /8.80	SUMMERVILLE	SC
4.225/9.225	MANASSAS	VA
4.40 /9.40	MEMPHIS	TN
4.825/9.825	ATLANTA	GA
4.90 /9.90	WOODBRIDGE	VA
4.925/9.925	WINCH/BLUEMONT	VA
2.01 /ACON	FISHERVILLE	TN

6 METERS

2.58 /2.48	FAIRFAX	VA
2.525/2.525	HENDERSONVILLE	NC
	CHARLOTTESVILLE	VA
2.76 /2.525	KNOXVILLE	TN
2.64 /2.84	FAIRFAX STA	VA
2.01 /3.01	HENDERSONVILLE	NC
	NEWPORT	NC
	CHATTANOOGA	TN
	MEMPHIS	TN
	ABINGTON	VA
	LEXNGTN/COLE MT	VA
	NORTN/HIGH KB	VA
2.03 /3.03	ROANOKE RAPIDS	NC
2.05 /3.05	COPE	SC
2.09 /3.09	BOLT/BOLT MT	WV
2.13 /3.13	ALEXANDRIA	VA
	DANVILLE(DCC)	VA
2.15 /3.15	KNXVL/ENG MT	TN
	BEDFORD/THAX MT	VA
2.17 /3.17	ST MARYS/BENS R	WV
2.25 /3.25	KNOXVILLE	TN
	RIDGEWAY	VA
	ROANOKE	VA
2.33 /3.33	SAPPHIRE	NC
2.35 /3.35	CARY	NC
	KNOXVILLE	TN
2.41 /3.41	PICKENS	SC
2.43 /3.43	RICHMOND	VA
2.47 /3.47	HICKORY	NC
2.67 /3.67	STATESVILLE	NC
2.09 /3.69	HERNSHAW/BEE MT	WV

10 METERS

9.52 /9.62	WILKESBORO	NC
	MEMPHIS/FRAYSER	TN
9.54 /9.64	CHAPEL HILL	NC
9.56 /9.66	SAPPHIRE	NC
9.58 /9.68	STERLING	VA

CVRA-SERA REPEATER INDEX LISTINGS BY CITY-BY-STATE

NORTH CAROLINA REPEATERS

2 METERS

AHOSKIE	WB4YNF	144.53	145.13	N	A
AHOSKIE	WA4ZGQ	146.31	146.91	N	PA
ALBEMARLE	K4OGB	146.385	146.985		
ASHEBORO	WD4AIB	147.855	147.255		PAL
ASHEVILLE	WA4QCO	146.235	146.835		A
ASHVL/MT PISGAH	WA4BVW	146.16	146.76		
ASHVL/SPIVEY MT	W4MOE	146.31	146.91	N	PA
BENSON	AK4H	147.87	147.27		PA
BOONE/RICH MTN	WA4KDB	147.96	147.36		
BREVARD/TRNS CTY	WB4CJS	147.735	147.135		
BURGAW	K4LZY	146.34	146.94		
BURLINGTON	WB4ZIN	146.07	146.67	N	A
BURLINGTON	W4VGZ	146.475	147.075	N	EA
BURLINGTON	WA4HBQ	147.675	147.075	N	EA
BURNSVILLE	WA4LLR	147.975	147.375		A
CARTHAGE	W4NIW	147.84	147.24		
CHARLOTTE	W4BFB	144.63	145.23		
CHARLOTTE	W4BFB	144.69	145.29		A
CHARLOTTE	WA4AOS	144.75	145.35		
CHARLOTTE	W4BFB	146.34	146.94		A
CHARLOTTE	W4CQ	146.46	147.06	N	A
CHARLOTTE	WD4PLY	147.99	147.39	N	PA
CHARLOTTE/RTTY	W4BFB	146.175	146.775		R
CHERRY MT	W4TMT	146.07	146.67		
CLINTON	WA4LZD	146.19	146.79	N	
COLUMBIA	K4ITL	144.51	145.11	N	CL
CONCORD/KANNAP.	K4CEB	146.055	146.655		A
CROWDERS MT	WD4PLY	144.85	145.45	N	
DUNN	WB4FXM	146.10	146.70		PA
DURHAM	WA4WTX	144.85	145.45		C
DURHAM	WA4BFT	146.34	146.94	N	A
EDEN/MAYODAÑ	WA4ACP	147.84	147.24		
EDEN/STONEVILLE	WA4QBG	147.99	147.39		
ELIZABETH CITY	WA4VTX	146.055	146.655		A
ELIZABETHTOWN	N4DHW	146.175	146.775	N	
FAYETTEVILLE	N4EWG	146.205	146.805		
FAYETTEVILLE	WB4YZF	146.31	146.91		A
FAYETTEVILLE	WA4FLR	146.445	147.045		CR
FAYVLLE/FT BRAGG	W4LPL	147.93	147.33		
FOREST CITY	WA4BKU	147.84	147.24	N	
FRANKLIN	N4AC	144.89	145.49		
FRANKLIN	W4GHZ	147.84	147.24		
GAST/SPCR MT	W4REW	147.72	147.12	N	A
GASTONIA	K4NOQ	146.205	146.805		PA
GOLDSBORO	K4CYP	146.25	146.85		A
GREENSBORO	N4AZM	144.65	145.25		A
GREENSBORO	K4SNI	146.01	146.61		A
GREENSBORO	WA4MSS	146.16	146.76		
GREENSBORO	KB4IZ	147.63	147.03		
GREENSBORO	W4BUZ	147.81	147.21	N	
GREENVILLE	WA4DAN	144.75	145.35		L
GREENVILLE	K4ROK	147.975	147.375		
GREENVL/ESTN NC	W4GDF	147.69	147.09		
GRIFTON	W4NBR	146.085	146.685		
HENDERSONVILLE	WB4YAO	146.04	146.64	N	L
HENDSVL/PINCK MT	WA4KNI	144.67	145.27		A
HENDSVL/STONE MT	WA4KNI	147.855	147.255		A
HICKORY/BRT. MT	WA4MDW	146.25	146.85	N	
HIGH POINT	N4XO	144.81	145.41		A
HIGH POINT	NQ4T	146.40	147.00		LA
HIGH POINT	KB4BPV	147.435	146.835		A
HIGH POINT	NQ4T	147.60	147.00		LA
HIGH POINT	KA4DHP	147.765	147.165		PA
HILLSBOROUGH	WA4WTX	147.825	147.225		A
HOPE MILLS	WB4TRW	146.445	147.045	N	
JACKSONVILLE	WD4FVO	146.40	147.00		PA
JACKSONVILLE	WR4ATW	147.90	147.30	N	
LAKE TOXAWAY	K4MSK	147.795	147.195		
LAURINBURG	K4QWK	146.025	146.625		A
LENOIR/HIBRITN	KN4K	147.93	147.33		
LEWISVILLE	N4GGK	144.61	145.21		PA
LEXINGTON	K4IZM	146.31	146.91		PA
LILLINGTON	WA4FKI	144.87	145.47	N	
LK NORMN/CLT	WB4KPF	147.615	147.015		
LUMBERTON	W4NHV	147.90	147.30		EA
LUMBERTON	WB4MDI	147.96	147.36		
MACO	WA4LED	147.66	147.06		
MADISON	KA4YFF	146.295	146.895		
MAGGIE VALLEY	W4HCY	147.405	146.805		
MANTEO	K4UOR	146.34	146.94		
MARION/BEAR WLW	KA4DEC	147.705	147.105		
MAYODAN	WV4J	144.55	145.15		
MONROE	KF4NJ	144.79	145.39		C
MONROE	K4BGU	147.30	147.90	N	NB
MONROE/UCARS	K4JCK	147.705	147.105		A
MORENTN/HI PK	WB4UDS	144.55	145.15	N	
MORGANTON	K4VLY	147.75	147.15		
MT AIRY	WA4ZAS	146.37	146.97		EA
MT AIRY-RTTY	WA4ZAS	146.34	146.94		R
MT AIRY/TRNR MT	KD4J	144.73	145.33		A
MT MITCHELL	WA4BVW	144.59	145.19		
N. WILKESBORO	N4AGN	144.77	145.37		LPA
NAGS HEAD/BODIE	KE4PB	146.235	146.835	N	
NEW BERN	WD4JMS	146.01	146.61		A
NEWPORT	K4GRW	144.85	145.45	N	AL
NEWTON	WD4JWO	144.57	145.17		
OLD FORT	KA4ROZ	146.385	146.985		
OXFORD	N4EKK	144.57	145.17		T
RALEIGH	N4BEA	144.67	145.27		PAL
RALEIGH	NW4B	144.79	145.39	N	C
RALEIGH	N4CBI	144.89	145.49		
RALEIGH	W4DW	146.04	146.64		
RALEIGH	K4BWC	146.13	146.73		A
RALEIGH	K4ITL	146.28	146.88		L
RALEIGH	K4ITL	147.75	147.15		PA
REIDSVILLE	K4YFT	146.25	146.85		
ROANOKE RAPIDS	K4ITL	144.71	145.31	N	CL
ROANOKE RAPIDS	K4PUV	147.63	147.03		
ROARING GAP	WB4PZA	146.22	146.82		
ROBBINSVILLE	WD4CNS	146.445	147.045		
ROCKINGHAM	WA4ULA	146.355	146.955	N	
ROCKY MOUNT	K4EWL	147.72	147.12		PA
SALISBURY	W4EXU	146.13	146.73		
SANFORD	WB4EJJ	147.78	147.18		A
SAURATOWN MT	W4RXG	144.51	145.11		R
SAURATOWN MT	NQ4T	146.19	146.79		
SAUROTOWN MT	WA4GIC	144.87	145.47		
SHELBY	WD4DJA	146.28	146.88		
SHELBY	WD4DJA	147.945	147.345		PA
SMITHFIELD	KD4JQ	146.37	146.97		
SMITHFIELD	W4MKL	147.99	147.39	N	
SPARTA/GREEN MT	K4ITL	144.83	145.43		L
SPRING LAKE	WB4KDC	146.115	146.715	N	
STATESVILLE	AI4O	146.085	146.685		PA
STATSVL/ASBRY MT	WA4JRL	147.645	147.045	N	
SWANSBORO	KO4S	146.16	146.76		
TRENTON	K4ITL	144.61	145.21		L
TUCKASEGEE	W8OMV	147.90	147.30	N	
UNION CROSS	WA4RBW	147.915	147.315		
WADESBORO	WA4IAT	146.235	146.835		
WASHINGTON	WA4TEP	147.945	147.345		
WAXHAW	WB4OOA	146.295	146.895	N	PA
WAXHAW	WA4ZRS	147.465	146.865		A
WAYNESVILLE	N4SM	147.87	147.27		PA
WHITEVILLE	K4MSD	147.81	147.21		
WILLIAMSTON	KA4KNU	144.81	145.41		PA
WILMINGTON	W4VNK	146.13	146.73		PA
WILMINGTON	K4GMP	146.22	146.82		
WILMINGTON	N4CTJ	147.78	147.18	N	C
WILSON	WB4THL	146.16	146.76		
WINSTON-SALEM	WA4GIC	146.04	146.64		
YOUNGSVILLE	WD4AUI	146.445	147.045	N	

220 MHZ

ASHEVILLE	NC4N	223.00	224.60		
ASHVL/MT PISGAH	WA4BVW	222.34	223.94		
CHAPEL HILL	K2MZ	223.32	224.92	N	C
CHARLT/MINT HL	KE4ZC	222.80	224.40		
CHERRYVILLE	WB4UDS	223.36	224.96	N	
FAYETTEVILLE	W4EHF	222.42	224.02		
GIBSONVILLE	WB4IKY	223.22	224.82		R
GOLDSBORO	WD4OYO	223.36	224.96	N	
HENDERSONVILLE	WA4KNI	222.64	224.24		C

HICKORY	WA4MDW	222.42	224.02	N	
HIGH POINT	K4AZA	222.32	223.92		LA
HILLSBOROUGH	WA4WTX	222.34	223.94		L
LENOIR/HIBRITN	KN4K	222.56	224.16		
LINWOOD	KA4HUV	222.38	223.98	N	
LK NORMN/CLT	WB4KPF	223.08	224.68		
LOCUST	WA4ZIA	222.40	224.00		PA
MOORESBORO	N4JIF	222.60	224.20	N	C
MORGANTON	WB4PML	223.20	224.80		
MT MITCHELL	WA4BVW	222.94	224.54		
N. WILKESBORO	N4JFM	222.88	224.48	N	C
RALEIGH	WA4PEN	223.04	224.64	N	
ROCKY MOUNT	KA4DAP	222.36	223.96	N	
SALISBURY	W4EXU	223.16	224.76		
STATESVILLE	WA4PVI	222.70	224.30		
WINSTON-SALEM	WA4YHH	223.04	224.64	N	
WSTFLD/SAUTN MT	W4RXG	223.10	224.70		R
WSTFLD/SAUTN MT	W4RXG	223.28	224.88		

440 MHZ

AHOSKIE	WB4YNF	449.20	444.20	N	C
ASHVL/MT PISGAH	WA4COS	449.90	444.90	N	
CHAPEL HILL	K2MZ	448.875	443.875	N	C
CHARLOTTE	W4BFB	449.60	444.60	N	
CHARLOTTE	W4CQ	449.85	444.85	N	
CHARLT/MINT HL	KE4ZC	448.95	443.95		
DURHAM	WA4WTX	449.10	444.10		PA
FAYETTEVILLE	KB4ZW	449.40	444.40		
FAYETTEVILLE	KB4ZW	449.90	444.90		P
GREENSBORO	N4AZM	448.50	443.50		
GREENVILLE	AI4J	449.80	444.80	N	
HENDERSONVILLE	WA4KNI	449.25	444.25		C
HICKORY	K4JEQ	449.00	444.00		
HIGH POINT	K4AZA	447.90	442.90		L
LEWISVILLE	N4GGK	439.25	426.25		CV
LEXINGTON	W4HTG	449.50	444.50	N	C
LOCUST	WA4LBT	448.70	443.70		
MORGANTON	WB4PML	447.05	442.05		C
MT MITCHELL	WA4BVW	434.25	421.25		V
MT MITCHELL	N4DWU	448.60	443.60		
MT PISGAH	WA4COS	449.875	444.875	N	C
N. WILKESBORO	N4GGN	448.35	444.35	N	C
NEWTON	WD4JWO	449.30	444.30	N	C
ROCKY MOUNT	N4JEH	449.70	444.70		
SAURATOWN MT	NQ4T	448.50	443.50		
SAURATOWN MT	WA4GIC	449.975	444.975		C
SHELBY	WD4DJA	439.25	427.25		V
WILKESBORO	KC4XE	448.55	443.55		
WILLIAMSTON	KA4KNU	449.65	444.65		
WILMINGTON	KB4BR	449.70	444.70		
WILSON	NE4J	449.90	444.90		

10 METERS

CHAPEL HILL	K2MZ	29.54	29.64	N	C
SAPPHIRE	W4EHV	29.56	29.66	N	C
WILKESBORO	KC4XE	29.52	29.62		L

6 METERS

CARY	WR4AVP	52.35	53.35	N	
HENDERSONVILLE	WB4YAO	52.01	53.01	N	
HENDERSONVILLE	WB4YAO	52.525	52.525	N	RB
HICKORY	WA4MDW	52.47	53.47	N	
NEWPORT	K4GRW	52.01	53.01	N	P
ROANOKE RAPIDS	K4PUV	52.03	53.03		
SAPPHIRE	W4EHV	52.33	53.33	N	C
STATESVILLE	WA4WRS	52.67	53.67	N	

SOUTH CAROLINA REPEATERS

2 METERS

AIKEN	N4ADM	147.885	147.285		
ANDERSON	N4SZ	146.37	146.97		PA
ANDERSON/SAS MT	W4FX	145.01	PKET	N	
ANDERSON/SAS MT	W4FVV	146.19	146.79		
BAMBERG	WA4DFP	144.73	145.33	N	
BARNWELL	WA4FOF	147.63	147.03	N	P
CHARLESTON	WB4URP	144.65	145.25	N	
CHARLESTON	K4ILT	146.16	146.76	N	PA
CHARLESTON	W4IVE	146.19	146.79	N	
CHARLESTON	WB4LET	147.87	147.27		PA
CHARLESTON	K4LWS	147.90	147.30		A
CHELSEA	KB4GY	146.01	146.61		
CHERAW	KA4ABW	147.735	147.135		PA
COLUMBIA	KC4LB	144.83	145.43		PA
COLUMBIA	K4AVU	146.28	146.88		
COLUMBIA	KC4LB	146.34	146.94		
COLUMBIA	N4EOY	147.93	147.33		L
DILLON/PEE DEE	NN4N	146.145	146.745		EA
FLORENCE	W4ULH	145.01	PKET		
FLORENCE	W4ULH	146.25	146.85		A
FLORENCE	WA4ISM	146.37	146.97		PA
FT JACKSON	WB4OCB	146.16	146.76		
FT MILL/CAROWND	AA4SC	147.78	147.18		
GASTON	WB4NEP	144.61	145.21		PA
GEORGETOWN	WD4DMI	147.975	147.375	N	
GOOSE CREEK	WD4NUN	147.675	147.075		A
GOOSE CREEK	W4NAT	147.78	147.18	N	
GREENVILLE	W4AZT	146.10	146.70		A
GREENVILLE	W4IQQ	146.34	146.94		
GREENVILLE	K4LEO	147.375	147.975		NBT
GREENWOOD	KB4CS	144.53	145.13	N	C
GREENWOOD	KB4CS	147.765	147.165		A
GREENWOOD/HODGES	KB4YF	144.53	145.13		
GRNVLE/CSRS HD	W4NYK	146.01	146.61		
GRNVLE/PARIS MT	W4NYK	146.22	146.82		PA
HILTON HEAD	KB4GY	147.84	147.24	N	P
INMAN	WD8OXE	144.87	145.47		
LANCASTER	W4PAX	146.10	146.70		
LANCASTER	WB4BGF	147.84	147.24		
LAURENS	KA4LBI	146.25	146.85	N	A
LEXINGTON	KA4FEC	147.99	147.39		
LITTLE MT.	K4AVU	147.81	147.21		
MARION	W4YLT	146.40	147.00	N	EA
MONCKS CORNER	WD4CWY	147.75	147.15	N	
MT PLEASANT	K4ESG	146.07	146.67		
MYRTLE BEACH	KI4CB	144.51	145.11		P
MYRTLE BEACH	K4IQM	146.01	146.61		PA
MYRTLE BEACH	WA4YGE	147.72	147.12	N	
MYRTLE BEACH, N	WA4JYR	147.63	147.03	N	PA
N. AUGUSTA	K4FKJ	146.13	146.73		
N. AUGUSTA	K4AUM	146.34	146.94		EA
NEWBERRY	KB4CO	146.085	146.685		
ORANGEBURG	WR4AQY	147.69	147.09	N	A
PICKENS	WB4YXZ	146.40	147.00		
PROSPERITY	WB4OCB	147.84	147.24		
RKY RDG/WALLACE	KA4ABW	144.89	145.49		
ROCK HILL	KA4RFA	144.71	145.31	N	LPA
ROCK HILL	K4YTZ	146.325	146.925	N	PA
ROCK HILL	K4YTZ	146.43	147.03	N	PA
ROCKY SPUR	KS4I	147.885	147.285	N	
SENECA/LONG MT	WA4JRJ	147.87	147.27	N	
SIMPSONVILLE	WA4LDP	146.13	146.73		
SIMPSONVILLE	WA4SDT	147.75	147.15	N	R
SPARTANBURG	WD8OXE	147.69	147.09		PA
SUMTER	WS4P	146.04	146.64		
SUMTER	WA4UMU	147.615	147.015		A
SUMTER	W4VFR	147.66	147.06		A
WHITE HALL	W4BWZ	146.31	146.91	N	

220 MHZ

COLUMBIA	N4EOY	222.30	223.90		L
COLUMBIA	N4EOY	223.30	224.90		L
EASLEY/SASFRS MT	KJ4X	222.46	224.06		
LEXINGTON	KA4FEC	222.52	224.12		P
PICKENS/CSRS HD	WB4QHF	222.54	224.14		PA

440 MHZ

CAESARS HEAD	WB4LZQ	448.875	443.875	N	
COLUMBIA	N4EOY	448.00	443.00		
COLUMBIA	KC4YI	449.10	444.10		
LEXINGTON	N4GUP	439.25	421.25		V
MT PLEASANT	N4DRU	449.70	444.70		
N. AUGUSTA	WB4OCB	449.15	444.15	N	
PICKENS/CSRS HD	WA6WAY	447.00	442.00		PA
ROCK HILL	KA4RFA	449.75	444.75	N	LPA
SUMMERVILLE	WA4HNK	443.80	448.80	N	NB
SUMTER	WA4UMU	439.25	427.25		V
SUMTER	N4IGN	449.95	444.95	N	P

6 METERS

COPE	N4HSN	52.05	53.05	N	
PICKENS	WB4YXY	52.41	53.41		

VIRGINIA REPEATERS

2 METERS

ACCOMAC	WA4TVS	147.855	147.255		A
ALEXANDRIA	N4FSC	144.71	145.31	M	PA
ALEXANDRIA	WD4PDP	146.055	146.655	M	PA
ALEXANDRIA	W4HFH	147.915	147.315	M	L
ALTAVISTA	WA4ISI	146.055	146.655		A
ARLINGTON	N4EFJ	144.87	145.47	M	
ARLINGTON	WA4YVM	146.445	147.045	M	T
BARREN SPRINGS	K4HZS	146.07	146.67		
BEDFD/APL ORCH	WB4DBB	144.63	145.23		
BEDFORD	WB4JBJ	147.705	147.105		LR
BLACKSBURG	AB9I	146.115	146.715		
BLAND	N4AZJ	144.75	145.35	N	L
BLUEFIELD	W8MOP	144.89	145.49		
BRISTOL	WDECYZ	146.28	146.88	N	
BROMLEY MT	WR4ATJ	146.01	146.61	N	
CHARLOTTESVILLE	WA4TFZ	146.16	146.76		
CHARLOTTESVILLE	WA4TFZ	146.325	146.925		
CHESAPEAKE	K4NDH	144.69	145.29	N	EA
CHESAPEAKE	N4GSP	146.01	146.61		A
CHESAPEAKE	N4SD	146.19	146.79		A
CHESTERFIELD	KA4CBB	147.96	147.36		
CHESTERFLD CO	WA4ECM	147.66	147.06		
CLIFTON FORGE	K4QEL	147.90	147.30	N	
COVINGTON	WA4HTI	146.205	146.805		
CULPEPPER	N4FAF	147.72	147.12	M	
DANVILLE	K4YZR	147.95	147.35	N	NB
DANVILLE(DCC)	WB4GJG	146.325	146.925		
DANVILLE/WHT OAK	K4WQS	146.10	146.70	N	
DUBLIN	KT4Z	147.78	147.18		
DUFFLD/POWLL MT	KA4BHH	146.10	146.70		
FAIRFAX	W4LBL	146.19	146.79	M	PA
FALLS CHURCH	W4AQD	144.75	145.35	M	T
FARMVILLE	WB4NWP	146.31	146.91	N	A
FINCASTLE	W4WIC	146.04	146.64		
FOREST	K4STE	146.16	146.76		A
FRANKLIN	K4SPS	147.90	147.30	N	PA
FREDRICKSBURG	WB4LNT	147.615	147.015		
GALAX	WA4ZIV	144.79	145.39	N	
GALAX/BRIRP MT	N4VL	147.69	147.09		
GALAX/FRIES	WA4DFH	147.735	147.135		A
GALAX/LKOUT MT	N4VL	144.53	145.13		EA
GATE CITY	WD4GTA	147.945	147.345	N	
GRUNDY	K4HWQ	147.92	147.32	N	ANB
GUM SPRING	KB4GX	147.87	147.27		
HAMPTON	K4UMI	145.23	PKET	N	
HAMPTON	K4DHO	146.13	146.73		PA
HAMPTON	K4UMI	146.34	146.94	N	T
HAZEL MT	WD4CYZ	146.235	146.835	N	
HILLSVILLE	WD4BTJ	147.975	147.375		A
JONESVILLE	WA4OVC	146.31	146.91		
KILMARNOCK	W2MS	144.61	145.21	N	C
LEXINGTON	WA4WBD	146.07	146.67		A
LEXNGTN/COLE MT	K4PQD	147.93	147.33	N	
LYNCHBURG	W4WWQ	146.01	146.61	N	
LYNCHBURG	AB4M	147.43	144.93		NB
LYNCHBURG	WA4RTS	147.795	147.195		
LYNCHBURG	W4OSH	147.975	147.375	N	PA
MADISON	N4AJO	147.99	147.39	M	
MANASSAS	WD4JCE	144.67	145.27	M	R
MANASSAS	WA4FPM	146.37	146.97		PA
MARION	N4BIW	146.04	146.64		
MARTINSVILLE	AB4L	147.885	147.285		
MCLEAN	WD4IWG	147.81	147.21	M	R
MT. LK/BALD KNB	K4TUE	146.31	146.91	N	
NEW MARKET	WB4DAK	146.025	146.625		
NEWPORT NEWS	WB4CTF	147.765	147.165		PA
NEWPORT NEWS	WA4OHX	147.975	147.375	N	PA
NORFOLK	NE4D	146.10	146.70		
PETERSBURG	N4KAF	147.78	147.18		
PETERSBURG	K4ARO	147.84	147.24		TPA
PETERSBURG	K4ARO	147.99	147.39		
PORTSMOUTH	N4PR	146.25	146.85		
RADFORD	KC4WA	147.645	147.045		
RICHMOND	K4YPE	144.51	145.11		A
RICHMOND	W4SQT	144.83	145.43		
RICHMOND	WB4QEY	146.04	146.64		PA
RICHMOND	WA4ZBE	146.28	146.88		PA
RICHMOND	W4ZA	146.34	146.94		
RICHMOND	WA4JST	146.43	147.03	N	
RICHMOND	N4HB	147.735	147.135		
ROANOKE	WB4QET	146.34	146.94	N	A
ROANOKE/POOR MT	WB4QOJ	146.145	146.745		LPA
ROANOKE/POOR MT	W4CA	146.385	146.985		
SALEM	W4PDL	146.28	146.88	N	
SOUTH BOSTON	WD4LBM	146.46	147.06		
STAUNTON	W4XD	146.10	146.70		
STAUNTON	WA4ZBP	146.25	146.85		
STAUNTON	W4WRN	146.37	146.97	N	EA
STAUNTON/EL. KB	W4WRN	147.645	147.045	N	
STERLING	WA4TXE	146.115	146.715	M	
SUFFOLK	WA4HMT	146.40	147.00	N	PA
TAZEWELL	WD4DZE	147.75	147.15	N	
TYSONS CORNER	WB4FMD	146.31	146.91	M	PA
VIENNA	K4HTA	146.085	146.685	M	
VIRGINIA BEACH	WA4KXV	146.37	146.97		PA
VIRGINIA BEACH	WA4SBC	147.645	147.045	N	
WARRENTON	WB4FJT	147.765	147.165	M	
WARSAW	KA4ZIP	147.93	147.33		
WAYNESBORO	W4BLD	147.63	147.03		
WAYNSBR/AFTON MT	W4PNT	147.675	147.075		
WILLIAMSBURG	W4NTG	146.07	146.67		
WINCH/BLUEMONT	WA4TSC	147.90	147.30		
WINCHESTER	W4RKC	146.22	146.82		
WISE/HIGH KNOB	K4AXO	147.81	147.21	N	
WOODBRIDGE	WB4FQR	147.84	147.24	M	A
WYTHEVILLE	WA4EMS	146.175	146.775		
YORKTOWN	WD4SDC	147.825	147.225	N	

220 MHZ

ALEXANDRIA	WA4CCF	223.22	224.82	M	L
DAN/WHT OAK	K4OAK	223.16	224.76	N	
FAIRFAX	WB4YHD	222.50	224.10	M	L
FALLS CHURCH	N4CHP	223.38	224.98	M	PA
GALAX/PT LKOUT	WA4DFH	222.74	224.34		
PETERSBURG	K4ARO	222.40	224.00		
ROANOKE/POOR MTN	WB4DBB	223.34	224.94		
STERLING PK	WD4KHP	222.12	223.72		C
TYSONS CORNER	WD4KHP	223.12	224.72		PL

440 MHZ

ALBERTA	K4ARO	449.55	444.55	N	L
ALEXANDRIA	WR4AAG	439.25	426.27	M	V
ALEXANDRIA	W4HFH	449.60	444.60	M	
APPLE ORCH MT	WB4DBB	449.35	444.35		L
CHARLOTTESVILLE	WA4TFZ	449.25	444.25		
CHESAPEAKE	N4EVG	448.90	444.90	N	C
COVINGTON	WA4HTI	447.25	442.25		
FALLS CHURCH	WB8CRK	449.45	444.45	M	L
FINCASTLE	W4WIC	448.75	443.75		
HAMPTON	K4UMI	448.65	443.65	N	
LEXNGTN/COLE MT	K4PQD	449.15	444.15	N	
LYNCHBURG	K4HEX	449.50	444.50		
MANASSAS	WD4JCE	444.225	449.225	M	L
MANASSAS	WB3EAQ	448.30	443.80	M	
NORFOLK	W4WIN	439.25	426.25	N	V
NORTHWEST/SE VA	KR4K	448.80	443.80	N	
PETERSBURG	K4ARO	449.85	444.85		
RICHMOND	N4HB	449.00	444.00		
RICHMOND	K4ARO	449.65	444.65		
ROANOKE	N4HON	447.70	442.70		
ROANOKE	WR4AFE	447.75	442.75	N	
ROANOKE/POOR MT	W4CA	447.50	442.50		
SALUDA	WA4UAF	448.90	443.90	N	
SPRINGFIELD	AA4VA	449.15	444.15	M	
STAUNTON	WA4ZBP	449.825	444.825		C
STAUNTON	W4WRN	449.95	444.95	N	
TYSONS CORNER	WB6GUS	448.50	443.50	M	
TYSONS CORNER	K4JYF	449.75	444.75	M	
VIRGINIA BEACH	WA4KXV	449.95	444.95		
WAYNESBORO	W4BLD	449.30	444.30		TPA
WAYNSBR/AFTON MT	W4BLD	449.05	444.05		
WILLIAMSBURG	W4NTG	448.95	443.95	M	
WINCH/BLUEMONT	WA4TSC	444.925	449.925		NB
WINCHESTER	W3CSG	447.00	442.00	M	
WOODBRIDGE	WB4FQR	444.90	449.90	M	

VIRGINIA REPEATERS *Continued*

6 METERS

ABINGTON	WR4ATJ	52.01	53.01	M	L
ALEXANDRIA	WA4CCF	52.13	53.13	M	L
BEDFORD/THAX MT	WB4DBB	52.15	53.15		
CHARLOTTESVILLE	WA4TFZ	52.525	52.525		RB
DANVILLE(DCC)	WB4GJG	52.13	53.13		
FAIRFAX	KA4DCS	52.58	52.48	M	NB
FAIRFAX STA	WD4KHP	52.64	52.84		NB
LEXNGTN/COLE MT	K4PQD	52.01	53.01	N	L
NORTN/HIGH KB	K4LSP	52.01	53.01	N	
RICHMOND	KA4NNN	52.43	53.43		N
RIDGEWAY	KE4FJ	52.25	53.25	N	
ROANOKE	WB4DBB	52.25	53.25		L

10 METERS

STERLING	KD4DN	29.58	29.68	M	P

TENNESSEE REPEATERS

2 METERS

ALAMO	WB4EDS	147.135	147.735	N	B
ALTAMONT	WR4AWN	146.37	146.97	N	
ATHENS	WB4GRC	144.71	145.31	N	
BENTON	K4SIR	144.85	145.45	N	
BIRMINGHAM(ALA)	WD4BXA	147.285	147.885		ANB
BLOUNTVILLE	WA4KMG	147.60	147.00	N	
BRISTOL	K4ILW	146.07	146.67		A
BRISTOL	WD4CYZ	146.28	146.88	N	
BRISTOL/HLSTN MT	WR4ADO	146.16	146.76	N	
BROWNSVILLE	WA4ABU	146.655	146.055	N	NB
CHATT/SIGNAL MT	WA4ZOK	147.60	147.00		PA
CHATTANOOGA	K4VCM	144.69	145.29		
CHATTANOOGA	W4AM	144.73	145.33		
CHATTANOOGA	KB4TZ	144.79	145.39		A
CHATTANOOGA	K4CMY	146.01	146.61		
CHATTANOOGA	W4DSK	146.19	146.79		A
CHATTANOOGA-RTTY	K4CMY	144.53	145.13	N	
CLARKSVILLE	WA4TEQ	147.60	147.00	N	
CLEVELAND	WD4DES	147.78	147.18		
COOKEVILLE	WA4UCE	146.07	146.67	N	A
COOKEVILLE	N4WS	147.81	147.21		PA
COVINGTON	WA4VXW	147.93	147.33	N	
CROSSVILLE	KE4RX	146.04	146.64	N	
CROSSVILLE	W4CV	147.93	147.33	N	
CUMBERLAND CTY	N4GMT	144.73	145.33	N	
DAYTON/RHEA CTY	K4ZLA	147.99	147.39	N	
DECATUR-PONE KB	W4RJC	144.55	145.15		
DONELSON	WA4BZU	147.885	147.255	N	TPA
DYERSBURG	AA4HF	146.145	146.745	N	
FAYETTEVILLE	KO4G	146.265	146.865	N	
FAYETTEVILLE	W4NIQ	147.63	147.03	N	
FISHERVILLE	N4DRL	144.65	145.25		A
FRANKLIN	WB4HCK	144.55	145.15	N	RB
FRAYSER	W4UFT	146.10	146.70	N	
GALLATIN	W4NIT	147.84	147.24	N	PA
GALLATIN	WA4YQC	147.87	147.27	N	PA
GALLATIN	WB4DLQ	147.99	147.39	N	T
GREENEVILLE	WS4X	144.79	145.39		
GREENEVILLE	WB4TUO	144.81	145.41		
GRNVLE/GRYSTN	WA4LYF	147.66	147.06		A
GTLBG/COVE MTN	WA4KJH	146.25	146.85		LEA
HENDERSONVILLE	WB4WZK	144.67	145.27		
HENDERSONVILLE	WB4WZK	147.915	147.315		P
HENDERSONVILLE	WD4FFM	147.945	147.345	N	
HERMITAGE	WB4DOR	144.79	145.39		
JACKSON	KF4SC	144.71	145.31	N	
JACKSON	W4WKZ	147.81	147.21	N	
JASPER	KD4XX	144.59	145.19	N	
JOHNSON CITY	WB4EHK	146.19	146.79		
JOHNSON CITY	KE4FH	147.87	147.27	N	A
KNGSPT/BAYS MT	W4TRC	146.37	146.97		A
KNOXVILLE	WB4JSD	144.51	145.11		R
KNOXVILLE	K4KFD	144.61	145.21	N	A
KNOXVILLE	WA4TEM	144.73	145.33		A
KNOXVILLE	WA4GZE	144.77	145.37		
KNOXVILLE	WB4GBI	144.83	145.43		
KNOXVILLE	K4HXD	146.34	146.94	N	
KNOXVILLE	K4HXD	147.675	147.075	N	A
KNOXVILLE	W4BBB	147.90	147.30		
KNXVL/CROSS MT	WB4HAP	147.96	147.36		
KNXVL/ENG MT	WB4IOB	146.13	146.73		
KNXVL/HOUSE MT	WB4GBI	144.87	145.47		
LAFOLLETTE	KA4OAK	144.53	145.13		A
LAFOLLETTE/WMT	W4TZG	146.07	146.67		
LAKE CITY	WB4OAH	146.22	146.82	N	
LEBANON	KE4VZ	146.13	146.73		PA
LEBANON	WB4DOR	147.645	147.045		
LENOIR CITY	KE4SK	144.57	145.17	N	
LEXINGTON	WB4LGH	146.43	147.03	N	
MANCHESTER	W4FOT	146.10	146.70	N	A
MARTIN	WA4ZQX	146.625	146.025		NB
MCMINNVILLE	WA4CPJ	144.63	145.23		A
MCMINVL/SHT MT	W4KKO	144.89	145.49		
MEDINA	K4BEZ	146.37	146.97	N	A
MEMPHIS	WA4VIP	144.81	145.41	N	
MEMPHIS	WA4KOG	144.89	145.49	N	
MEMPHIS	WB4MQD	145.33	PKET	N	
MEMPHIS	W4GYS	146.04	146.64	N	
MEMPHIS	WA4DAZ	146.13	146.73	N	
MEMPHIS	K4FZJ	146.19	147.51	N	NB
MEMPHIS	W4BS	146.22	146.82	N	
MEMPHIS	WA4KOG	146.25	146.85	N	A
MEMPHIS	WA4ETE	146.28	146.88	N	A
MEMPHIS	K4BN	146.34	146.94	N	A
MEMPHIS	K4FZJ	146.40	147.00	N	
MEMPHIS	WA4MQQ	146.46	147.06	N	
MEMPHIS	W4ZJM	147.63	147.03		L
MEMPHIS	WB4DAZ	147.72	147.12	N	AT
MEMPHIS	WA5KUB	147.75	147.15	N	
MEMPHIS	WA4KOG	147.78	147.18	N	
MEMPHIS	WD4APK	147.84	147.24	N	
MEMPHIS	WA4ADT	147.90	147.30	N	
MEMPHIS	WB4MMI	147.96	147.36	N	
MILLINGTON/NB	W4ODR	146.43	147.03		L
MORRISTOWN	WD4PRQ	147.63	147.03		EA
MORRISTOWN	WB4OAH	147.825	147.225	N	
MOUNTAIN CITY	WD4OMO	144.87	145.47	N	
MUFREESBORO	N4FJI	144.61	145.21	N	
MURFREESBORO	WB4LHO	144.57	145.17		PA
NASHVILLE	N4AJS	144.65	145.25	N	
NASHVILLE	KA4KNG	144.75	145.35	N	
NASHVILLE	N4ARK	144.87	145.47	N	
NASHVILLE	WA4PCD	146.01	146.61	N	PA
NASHVILLE	WB4NTM	146.04	146.64		EA
NASHVILLE	WB4QES	146.16	146.76	N	
NASHVILLE	W4SQE	146.19	146.79		
NASHVILLE	N4TK	146.25	146.85	N	PA
NASHVILLE	WB4QES	146.28	146.88	N	
NASHVILLE	WA4PCD	146.34	146.94	N	
NASHVILLE	AF4K	147.615	147.015	N	
NASHVILLE	WD4FFM	147.705	147.105	N	
NASHVILLE	WA4PCD	147.75	147.15	N	
NASHVILLE	WA4PCD	147.78	147.18	N	
NASHVILLE	WB4ZSA	147.90	147.30	N	PA
NASHVILLE	N4AJS	147.93	147.33	N	
NASHVILLE S.	WB4NTM	147.96	147.36		R
NASHVILLE S.W.	WB4NTM	146.07	146.67		EA
OAK RIDGE	W4SKH	146.28	146.88	N	
OAK RIDGE	W4SKH	146.37	146.97	N	A
OAK RIDGE	K4EAJ	147.72	147.12		L
OAK RIDGE	K4EAJ	147.75	147.15		R
PARIS	K4KLX	147.96	147.36		A
PEGASUS	WB4SQC	144.69	145.29		A
PIKEVILLE	K4MJM	147.885	147.285		
PULASKI/MUS MT	W4JVO	146.175	146.775		
SAVANNAH	WB4DQU	146.31	146.91	N	
SHELBYVILLE	W4QEB	147.66	147.06		A
SHIELDS MT	N4CJX	144.67	145.27		EA

CVRA REPEATER SYMBOLS

Unmarked in First Code column-Full CVRA Members

N	NON Member CVRA	RB	Remote Base System
NB	Not On Band Plan Freq.	T	Tone Access Repeater
M	T-MARC Repeater	L	Linked Repeater
A	Open Autopatch	R	Radioteletype Rptr.
FA	Private Autopatch	V	Television (SS or ATV)
EA	Emerg. Autopatch	P	Proposed Repeater
		C	Under Construction
		O	Off Air Temporarily

TENNESSEE REPEATERS

SHORT MT	W4YXA	145.01	PKET	N	C
SHORT MTN	W4YXA	146.31	146.91		
SIGNAL MT	AD4F	146.055	146.655	N	
SPARTA/BON AIR	W4BSA	147.69	147.09		A
SPRING HILL	NW4E	144.85	145.45		A
STANTONVILLE	KA4OHC	144.79	145.39	N	
UNION CITY	WA4YGM	147.615	147.015		A
WAVERLY	NO4Q	146.685	146.085	N	NB
WINCHESTER	WR4AFH	146.22	146.82	N	
220 MHZ					
CHATT/SIGNAL MT	WA4ZOK	223.30	224.90		
CHATTANOOGA	K4VCM	223.18	224.78		A
CLARKSVILLE	KF4GP	222.34	223.94	N	
FRANKLIN	WD4SGS	222.54	224.14	N	
GALLATIN	WB4ZSA	222.38	223.98	N	PA
GREENEVILLE	WB4NKM	223.34	224.94		A
HERMITAGE	WB4RAB	222.30	223.90		
KNOXVILLE	WA4YON	222.86	224.46		
KNOXVILLE	W4BBB	222.90	224.50		
KNOXVILLE	KB4CTS	223.22	224.82	N	C
MEMPHS/FRAYSER	W4ZJM	222.34	223.94		LO
NASHVILLE	N4TB	222.42	224.02	N	
NASHVILLE	WB4UEX	222.48	224.08	N	
NASHVILLE	N4AWB	222.62	224.22	N	
440 MHZ					
ALAMO	WB4EDS	448.75	443.75	N	L
CHATT/SIGNAL MT	WA4ZOK	439.25	427.25		V
CHATTANOOGA	WA4NFO	449.10	444.10	N	
FAYETTEVILLE	KO4G	448.10	444.10	N	
FISHERVILLE	N4DRL	432.01	BEACON		
FISHERVILLE	N4DDS	449.30	444.30		A
FRANKLIN	WB4EPG	447.80	442.80	N	
GALLATIN	WD4BKY	449.35	444.35	N	
GALLATIN	WD4KWP	449.45	444.45		
GATLBG/COVE MT	WA4KJH	448.30	443.30		L
GREENEVILLE	WB4NKM	449.65	444.65		
HOOVER(ALA)	K4FUM	449.30	444.30		NBA
KNOXVILLE	WA4NTZ	447.50	442.50	N	
KNOXVILLE	K4HXD	449.30	444.30	N	
KNOXVILLE	KB4NK	449.60	444.60		
KNOXVILLE	WB4GBI	449.70	444.70		
MEDINA	K4BEZ	447.05	442.05	N	AL
MEMPHIS	WA4KOG	444.40	449.40	N	NB
MEMPHIS	WA4QWW	447.80	442.80	N	
MEMPHIS	W4ZJM	448.00	443.00		O
MEMPHIS	WA4DOR	448.40	443.40	N	A
MEMPHIS	KA4JXT	449.10	444.10	N	
MEMPHIS	KA4IZF	449.50	444.50	N	A
MEMPHIS	WD4APK	449.80	444.80	N	
MILAN	WD4ABJ	447.10	442.10		
MORRISTOWN	KA4NEX	449.20	444.20	N	
NASHVILLE	WA4PCD	449.55	444.55	N	
NASHVILLE	WA4PCD	449.675	444.675	N	
NASHVILLE	N4TK	449.775	444.775	N	
NASHVILLE	WB4THG	449.875	444.875	N	
NASHVILLE	WB4QES	449.975	444.975	N	
OAK RIDGE	K4EAJ	449.40	444.40		L
PARIS/GROVE HL	WA4WKS	448.50	443.50		
6 METERS					
CHATTANOOGA	WB4LRD	52.01	53.01		
KNOXVILLE	WA4YON	52.25	53.25		
KNOXVILLE	WB4GBI	52.35	53.35		C
KNOXVILLE	K4HXD	52.76	52.525	N	NB
KNXVL/ENG MT	WB4IOB	52.15	53.15		
MEMPHIS	WA4KOG	52.01	53.01	N	
10-METERS					
MEMPHIS/FRAYSER	W4ZJM	29.52	29.62		

The Journal Repeater Index Has Been Corrected As Of July 19, 1985

WEST VIRGINIA REPEATERS

2 METERS					
ALDSN/KENEY MT	WA8AVZ	146.13	146.73		
BECKLEY	KC8FW	144.77	145.37	N	LA
BKLY/FLAT TOP MT	K8BO	146.25	146.85	N	A
BOLT MT	KD8X	144.57	145.17	N	L
BRIDGEPORT	K8VNQ	147.72	147.12		EAL
BUCKHANNON	WD8LND	146.04	146.64		
BUCKHANNON	K8WYH	146.25	146.85	N	
CHARLESTON	W8WHQ	144.83	145.43	N	
CHARLESTON	WB8IFS	146.22	146.82	N	
CHARLESTON	WB8CQV	146.28	146.88	N	
CLARKSBURG	WB8ZVS	146.22	146.82		
CLARKSBURG	WB8DTM	146.50	52.525	N	NB
CRAIGSVILLE	KD8OG	144.67	145.27	N	L
DUNBAR	K8VKI	147.72	147.12		
EAST RIVER MNT	WD8OGY	146.355	147.955		A
FAIRMONT	W8SP	146.30	146.90		
FAIRMONT	W8SP	146.31	146.91		
FRANKLIN	W3RUA	147.945	147.345		
GRAFTON	K8VNQ	147.975	147.375		L
HARRISVILLE	WB8NSL	147.90	147.30	N	
HERNDON	WA8VDZ	146.025	146.625		LA
HUNTINGTON	WB8FEQ	144.61	145.21		R
HUNTINGTON	WB8EZR	146.04	146.64		
HUNTINGTON	W8VA	146.16	146.76		A
HUNTINGTON	KA8BKX	147.90	147.30		PA
KINGSTON/LICK KB	W8FG	144.87	145.47		
LAYLAND/MANN MT	N8BZS	144.71	145.31	N	L
LEON	WB8NMT	147.78	147.18	N	
LIBERTY	K8SLI	144.81	145.41	N	P
LOGAN	WD8KWC	144.63	145.23	N	
LOGAN	WA8ZLR	146.09	147.11	N	ONB
LOGAN/WARD RK MT	WD8DRV	146.37	146.97		
MADISON	KA8JYR	146.06	147.06	N	NB
MARMET/BEE MT	N8DBN	144.55	145.15	N	
MARTINSBURG	WA8FSE	144.55	145.15	M	
MARTINSBURG	WB8VAZ	147.855	147.255	M	
MCMECHEN	WA8ULB	146.31	146.91		PA
MORGANTOWN	K8LG	144.83	145.43	N	L
MORGANTOWN	W8CUL	146.16	146.76		LPA
MULLENS	KC8IT	147.63	147.03		LA
NEW MARTINSVLLE	WB8CSW	146.34	146.94	N	
OAK HILL	W8GH	146.19	146.79		EA
PARKERSBURG	WA8CRW	146.37	146.97		
PARKERSBURG	W8JZN	147.99	147.39		
PARSONS	K8VNQ	144.73	145.33		EAL
POINT PLEASANT	W8KNM	147.66	147.06	N	
PRINCETON	KA8PNC	146.46	147.06		A
RAVENSWOOD	WD8JNU	146.07	146.67		
RAVENSWOOD	WD8JNU	146.10	146.70		R
RICHWOOD	K8VKB	146.34	146.94		
RIPLEY	K8SNW	146.31	146.91	N	P
SALT ROCK	WD8MCR	144.51	145.11	N	
SCOTT DEPOT	K8SLI	147.87	147.27	N	A
SHERRARD	N8GL	146.115	146.715		
SPENCER	KA8AUW	146.01	146.61	N	
ST ALBANS	WB8GDY	146.40	147.00		
ST ALBANS	K8BCH	147.975	147.375		R
ST ALBANS/COAL	WB8KAD	146.12	146.72	N	PA
ST ALBANS/COAL	WB8OEC	147.75	147.15	N	
ST MARYS/BENS R	WB8ECC	147.63	147.03	N	L
TERRA ALTA	WB8PHU	147.60	147.00		PA
WEIRTON	KC8JN	146.34	146.94		A
WELCH	WB8SXZ	144.85	145.45	N	
WESTON	WD8EOM	144.79	145.39		PAL
WHEELING	W8YFX	144.59	145.19	N	
WHEELING	W8JDH	146.16	146.76	N	
220 MHZ					
HUNTINGTON	KA8BKX	222.54	224.14	N	
KINGSTON/LICK KB	W8FG	223.14	224.74		
440 MHZ					
LICK KNOB	N8FRV	449.80	444.80	N	
MORGANTOWN	K8LG	449.70	444.70	N	L
MORGANTOWN	W8CUL	449.80	444.80		PA
6 METERS					
BOLT/BOLT MT	N8DKL	52.09	53.09	N	
HERNSHAW/BEE MT	KA8SVR	52.09	53.69	N	NB
ST MARYS/BENS R	WD8RET	52.17	53.17	N	L

EAST KENTUCKY REPEATERS

2 METERS

ASHLAND	KK4Y	146.34	146.94		
ASHLAND	W4QKG	147.84	147.24		PA
ELKHORN CITY	WB4WAU	147.60	147.00		EAO
GRAYSON	KF4JO	146.10	146.70	N	
HARLAN	WM4R	144.75	145.35	N	
HAZARD	K4VHF	146.07	146.67		
JENKINS	WD4PDJ	147.99	147.39	N	
LOUISA	WA4SWF	146.13	146.73		EA
LYNCH/BLACK MT	N4IZD	147.945	147.345	N	
MIDDLESBORO	W4PPM	144.63	145.23	N	
MOREHEAD	K4GFY	146.31	146.91		
MT. STERLING	WD4KNE	147.745	147.145	N	NB
PAINTSVILLE	WB4WFW	147.69	147.09		A
PIKEVILLE	N4IWZ	144.59	145.19		
PIKEVILLE	N4IXA	146.25	146.85		EAL
PIKEVILLE	WB4GEL	147.87	147.27		PA
PINEVILLE	WA4YZY	146.04	146.64	N	
PRESTONSBURG	K4ICN	144.69	145.29		
PRESTONSBURG	WA4FHK	146.28	146.88		
WILLIAMSTON	???	144.73	145.33	N	
WINCHESTER	WB4ASZ	147.72	147.12		EA

220 MHZ

ASHLAND	KC4QK	222.34	223.94		
PIKEVILLE	WB4F	222.98	224.58		

440 MHZ

LYNCH/BLACK MT	N4IZD	448.10	443.10	N	

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ATHENS	WA4BKF	147.225	147.825	A
ATHENS	K4TQU	147.375	147.975	NB
ATLANTA	W4DOC	146.22	146.82	PA
ATLANTA/BELL	W4PME	144.81	145.41	
ATLANTA/GA TECH	W4AQL	144.55	145.15	PA
AUGUSTA	W4TUN	144.51	145.11	A
AUGUSTA	N4JA	144.77	145.37	
AUGUSTA	W4LWT	146.04	146.64	
AUGUSTA	NA4I	146.385	146.985	PA
AUGUSTA	W4ALK	147.72	147.12	PA
AUGUSTA/MARTINEZ	WB4YHT	144.89	145.49	
BALDWIN	WD4NHW	147.78	147.18	A
BLAIRSVILLE	N4EFL	147.705	147.105	
CEDARTOWN	W4CMA	147.72	147.12	PA
CUMMING/SAWNEE	K4BYK	147.75	147.15	PA
DALTON	K4WNG	144.63	145.23	
DALTON	N4BZJ	144.65	145.25	
DALTON	KC4TT	147.315	147.915	NB
DALTON	N4BZJ	147.735	147.135	
DALTON	KE4LN	147.81	147.21	
DECATUR	W4VTA	144.51	145.11	EA
DECATUR	WB4CPL	144.75	145.35	
DOUGLASVILLE	KB4EO	147.96	147.36	A
ELLIJAY	W4HHH	147.315	147.915	NB
GAINESVILLE	W4NSO	146.07	146.67	A
GRIFFIN	WB4GWA	144.79	145.39	PA
HARTWELL	KY4T	146.895	146.295	BEA
LANIER MT/SNLV	WD4JXR	147.675	147.075	PA
MARIETTA	WA4QPL	144.89	145.49	PA
MILLEDGEVILLE	KF4LI	144.55	145.15	A
NEWNAN	K4SEX	144.53	145.13	PA
NEWNAN	K4SEX	146.19	146.79	
RIVERDALE	WA4EPK	144.61	145.21	PA
ROSSVILLE	KC4EV	144.75	145.35	
ROSWELL	N4CLA	147.66	147.06	
ROSWL/SWEAT MT	N4CLA	144.87	145.47	
SAVANNAH	W4HBB	146.28	146.88	
SAVANNAH	W4HBB	146.37	146.97	A
SWEAT MT	KD4NC	146.13	146.73	
TOCCOA	KA4DIP	147.93	147.33	PA
WARNER ROBINS	W4HON	146.25	146.85	A

220 MHZ

DALTON	N4BZJ	223.28	224.88
ROSSVILLE	KC4EV	223.34	224.94

440 MHZ

ATLANTA	W4DOC	444.825	449.825	
ATLANTA/BELL	K4LDR	449.15	444.15	
CHATSWORTH	AA4EO	448.00	443.00	
DALTON	WA4TIW	449.735	444.735	
GRIFFIN	WB4GWA	448.90	443.90	PA
RIVERDALE	WA4EPK	449.55	444.55	

NOTE: Only Full Member Repeaters in Georgia are listed

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- Programmable sub-audible tone ENCODE and DECODE
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Amateur Radio Callsign History

— by Phil Sager, WB4FDT, Editor
The Virginia Ham, Newsletter

(Editor's note: Phil published this story in his "Virginia Hams" newsletter earlier this year. It has been picked up and published in numerous other newsletters around the State and area. For the benefit of our "New" Amateurs we repeat the story, which is of much interest.)

When I worked for the FCC in the Amateur Radio Division, our biggest headache was amateur radio callsigns. There was an "in-house" joke to the effect that no amateur was satisfied with his or her callsign. Hams with "non-preferred" (WA and WB callsigns) all wanted "preferred" one by three callsigns. The hams with preferred one by three callsigns (like W4ABC) wanted two-letter suffixes (like W4AB). Various amateurs wanted the callsign of a deceased friend or relative. And so on...

The following is a short chronicle of the history of amateur radio callsigns, with an eye toward Virginia's callsign area, which, as you are about to find out, was not always the fourth call area.

CALLSIGN HISTORY

Prior to 1912 there were no required callsigns, simply because there was no licensing of radio stations in the United States. Pioneer amateurs used their initials. Since the range of the average spark station was only a few miles, no further identification was needed.

With the passage of the Radio Act of 1912, amateurs had to be licensed to operate and were assigned their first government issued callsigns. The United States was divided into 9 callsign areas. All Amateur calls began with a number, followed by 2 letters, such as 4FD. The number of these "two-letter" suffixes quickly ran out, and a third letter was added, e.g., 4FDT. Since there were many "two-letter" callsigns in use, it was generally not considered prestigous to have a two letter callsign until the mid-1930's. In some call areas, two letter callsigns were available upon requests. Virginia was a part of the third call area until 1946.

The third call area reissued many two letter callsigns as they became available. The last two letter callsigns to be issued, as far as I can determine, were in 1927 in the third call area. It is also interesting to note that after the first World War, many amateurs considered the longer three letter callsigns to be more preferable to a shorter callsign, and specifically requested a longer callsign.

As the state of the art moved forward, amateurs began experimenting with short-wave frequencies, and international QSO's became more commonplace. European amateurs were using the same system of callsigns that the United States was using, and it was impossible to tell if the station was in the States of in Europe. Thus, to avoid confusion, many amateurs involved in DX work began to unofficially use a two-letter prefix to indicate their country of origin. U.S. Amateurs used the prefix "NU". The first letter stood for continent, "N" for North America, the second letter for the country, "U" for USA. Canadian amateurs used "NC" for North America-Canada. Australian amateurs used the prefix "OA". "O" for the continent Oceania, and "A" for Australia.

By the late 1920's, it was apparent that some sort of international system of callsign prefixes was needed. The International Radio Conference of 1928 assigned world-wide prefixes to all radio services. The Department of Commerce decided that radio amateurs within the continental United States should use the prefix "W". Amateurs in US territories or possessions would use the prefix "K".

In 1946, a tenth callsign area was added. This was the zero, 0, call area. At this time, the boundaries of several callsign areas were changed, Virginia was moved into the fourth callsign area. I do not know the reason for this. In some instances, amateurs were able to receive the same suffix, or a similar one, but most received new callsigns.

The new 0 callsign area was assigned to the mid-western states, which formerly had been part of the ninth call area. Also, various U.S. possessions and territories were assigned their own special prefix (KL7, KH6) for the first time. This prefix still began with a "K".

By the mid-1950's, many call areas experienced a shortage of 3-letter suffixed calls beginning with "W", so the Commission began issueing 3 letter suffixed calls beginning with "K" (e.g., K4AAA). In the fourth call area, "K" prefixed calls were issued between 1955-1959.

The addition of the Novice Class, license in 1952 brought the first 2-letter prefixed, 3 letter suffixed callsigns (also called "two by three" callsigns) into the amateur radio service. All Novice licensees were assigned WN prefixes, unless they were issued in U.S. possession or territory, where their callsign began with a "W" instead of a "K" (e.g., WL7AAA was a Novice in Alaska). In the late 1950's the Commission also issued a few "WV" prefixes to Novice class licensees in the second and sixth call areas.

By 1960 the "K" and "W" prefixes nearly filled in some callsign areas the Commission began issuing its first "WA" prefixed callsigns. (The last call sign area to began issuing "WA" prefixes was the third call area in 1965). In the fourth call area, "WA" prefixed calls were issued between 1960-1964. The first "WB" prefixed calls were issued in 1965 in the fourth call area and continued to be issued until 1970.

Between 1970-1976 in the fourth, second and sixth callsign areas, the Commission **reissued** all vacant "WA" and "WB" prefixed callsigns. (At the Commission we received many complaints to the effect that "I've been licensed for 10 years, have a "WB" prefix, and this new kid down the block gets a "WA" prefix!".) Between 1976-1981 new licensees in the fourth and sixth call area received WD prefixes.

As a footnote, I might also add that between 1960-61, in the fourth call area, if one by-passed the Novice license, and went straight for the general class instead of being assigned a "WA" prefix, you were assigned a preferred "W" prefix.

EXTRA-CLASS CALLSIGNS

In 1969 the Commission allowed any Extra class amateur who had been licensed 25 years to request a one letter prefix, two letter suffixed callsign (e.g. W4AA). This rule was later modified, so that beginning in July 1977 through 1980, any extra class licensee could request a two letter suffix callsign **of their choice.**

SPECIAL EVENT CALLS

These callsigns were formerly available to organizations and individuals to hop publicize an event of hapening. N6V, WW5500U, KK6BSA are examples of special event callsigns. These calls were usually temporary, only for the duration of the event. The most popular special event calls were those issued to any amateur requesting them during the International telecommunications Union Week in mid May. Between 1976-78 over 100 of the special calls, with the suffix "ITU" were issued each yar. (In 1977, I requested and received the callsign NQ4ITU).

TEMPORARY CALLSIGNS

Between 1976-1978 about 100 of these temporary callsigns were issued. Their prefix was always a "WT"

Continued on Page 30

1985 BLUEFIELD HAMFEST

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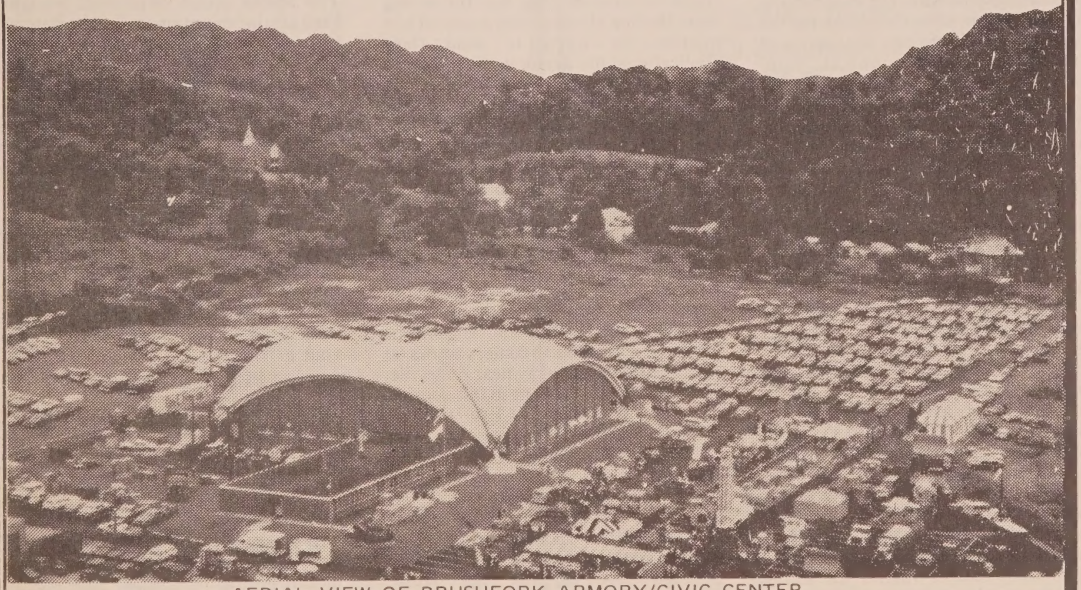

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SUNDAY, AUGUST 25th

Looking back

—by David Ward, KA4LVO

August 1975 The Repeater Journal

A look back at the August 1975 Repeater Journal reveals that the CVRA was taking advantage of the computer age. Evidence that a computer was being used was found in the repeater index by state. The indexes for North and South Carolina had been printed on a dot-matrix printer; the Virginia index was still done on the typewriter. All previous indexes had been typewritten. However, the index was only 2 pages of this 32 page issue of the Repeater Journal.

On the cover, there was no picture or illustration. This was the spot for "The President's Column", written by the president Ed Alderman, WA4PEN. In his article, Ed points out the successes and problems experienced by the organization since the officers took office on January 1. The biggest problem strangely enough was communication. Though hams were theoretically experts in communication, the directors, officers and committee chairman were not finding it that way. (Fortunately, this problem was quickly solved.) Ed summed up his thoughts by mentioning some ways the membership could become involved in improving the organization. High on the list was writing articles (technical, non-technical, news, etc.) for the Journal. Another way to get involved was to advertise or solicit advertisement for the Journal. A third way was to boost membership (associate) in the organization through the local club. Still another way was to voice comment concerning FCC dockets to the FCC Liason representative (then Don Harris, W4BUZ). In short, just "Get Involved in and support the CVRA!".

Regarding FCC rules, Don filled two pages with his report and thoughts. He explained the details of "Repeater Linking", the concept that became legal on July 11, 1975 as per docket 20073. Another docket, No. 20112 covered the automatic control of repeaters (passed on July 28.) "Automatic Control" was defined as "the use of devices and procedures for control so that a control operator does not have to be present at the control point at all times". One quick and easy way mentioned to utilize automatic control was to make the repeater a "closed repeater". Needless to say, repeater users didn't like this idea, and many repeater owners felt the same way. Finally, Don had a different answer to the story from the May 75 issue concerning the HOTLINE story, "When Not to Obey Rules". As FCC Liason, he felt that it was **NEVER** legal to violate the rules, even when it did involve tracking down an unlicensed person on a repeater (see my reference to it in the May 85 issue, page 46).

Regarding "HOTLINE", it seems that our last reports from it would appear in the August 75 Repeater Journal. The "73 Hotline" newsletter published its last issue on July 11, 1975. Hotline was produced by Wayne Green, W2NSD, and our editor (Bill Parris) stated that he would miss "the usual controversial comments from Wayne". One story from the Hotline dealt with a meeting scheduled between CB radio manufacturers and the FCC. Seems that the FCC wanted CB distributors to begin a point of sale licensing procedure, as "the Commission (had) become increasingly disturbed over the large number of unlicensed operators of CB stations". Another CB story covered the finely polished self-policing techniques of some CB'ers. In an effort to locate and silence a fellow operator who was using obscene language on the air, about forty men ganged up on the lone suspect in a car. As the police arrived to investigate the disturbance, the obscene language was also heard coming from the suspect's receiver; they had the wrong man. Hotline also reported a special box number for hams to send their applications (to avoid getting lost or held up in the 250,000 CB applications received monthly). Synthesized 2-meter rigs were just coming out, and VHF-Engineering announced plans to introduce a synthesizer unit that would work on most FM rigs on the market. On the commercial radio side, FCC docket 20509 proposed a service of licensing local govermental agencies to operate broadcast stations on 1606, 1612 and 530 kHz, using 10 watts power. These stations would broadcast traveler's information and emergency advisories. In years to come, visitors on the Blue Ridge Parkway near Asheville, NC would be able to tune in this service, as well as users of I-40 through Winston-Salem.

Besides the usual club meeting calendar, district news reports and hotline stories, there were other short stories and feature articles. One story concerned the tracking down of an unidentified steady carrier affecting the Salisbury (NC) repeater one evening. This led K4GHR, Bill Parris to write a two and a half page story on organized transmitter hunts ("fox hunts") as a club activity. Technical editor Watson Gabriel, WB4EXW prepared an article on the care and feeding of an amateur radio antenna. One paragraph of anothr story mentioned that activity was booming below 146 mHz. The new ARRL Repeater Directory had just come out, and it reported that 12.6% of all two meter repeaters in the country were on the 34/94 pair. They also showed that 6.5% of the nation's two-meter repeaters were in the three-state CVRA territory (we had 82 of the 1289 reported nationwide). A membership statistical report compiled by W4IZI and WB4LWX showed 452 associate and 110 full members in the CVRA. And finally, North Carolina license plate fees with amateur calls had just been lowered from $10.00 to $4.00 extra. (But it went back up. North Carolina hams in 1985 are trying once again to get the extra $10.00 fee reduced or eliminated!)

We'll close this look back 10 years with a story demonstrating perhaps the best use of amateur radio. On June 21, 1975, Fred Brown, WB4IFO was part of a group working on their rock climbing skills at Hanging Rock State Park (NC). The unexpected occurred: a steel pin supporting Fred came loose causing him to fall about 20 feet onto a ledge still some 150 feet up from the ground. As Fred lay unconscious, other members of the group descended to him, took his HT from his pocket and put out a call for help on the 22/82 Roaring Gap machine. Monitoring hams WB4VNZ and WB4EXW notified the Highway Patrol who relayed this message on to the Sauratown Mountain Rescue Squad. The rescue squad responded, brought Fred off the mountain and to the Baptist Hospital in Winston-Salem. Though Fred received a fractured skull and broken hand in the accident, his father, WA4CBB said that 2-meters was probably responsible for saving his son's life.

Continued from Page 28

(temporary) (e.g. WT4AAA). They were only issued when the licensee had a priority need to have a license immediately. (In those days there were no interim permits -- you had to wait until you received your license to use your privileges.

REPEATER CALLSIGNS

Beginning in 1973, repeater stations were assigned the prefix "WR". The Commission in 1978 eliminated repeater callsigns and did not renew those outstanding.

REVENGE OF THE NERDS

There is a feeling in the Commission that since amateurs are now licensing their own, why not let amateurs assign their own callsigns. In this age of deregulations, why not an amateur pick his own callsign? Thus the Commission might throw the callsign problem back at the amateurs and their organizations. I'm sure revenge would be sweet indeed!

(When am I changing my callsign? I'm holding out for **W4A** and nothing else!)

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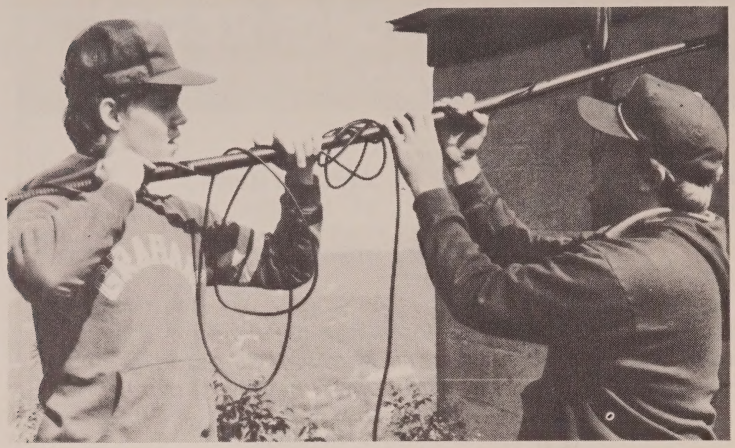

MARK WILLIAMS, N4HYN and TIM FORLINES, N8FFY complete lashing of new one-inch hardline for the 145.49 Bluefield repeater. They used the old RG-8X transmission line as a lashing material.

— by Don Williams, WA4K

BR549 is finally in top shape! Since first returning to the air on March 21st, the East River Amateur Radio Club repeater atop East River Mountain near Bluefield on 145.49 has been without a good transmission line. The original RG-8X did a poor job of carrying the signal 125 feet from repeater to antenna, and caused poor radiated power and also poor receive sensitivity.

After considerable hair-pulling and searching by the repeater committee, the group obtained approximately 190 feet of one inch hardline, thanks to the efforts of an area two-way radio company.

DON (ANDY) ANDERSON, WD8OOR completes installation of the new hardline on the BR549, a part of the overhaul for the machine.

Don Anderson, WD8OOR, Don Williams, WA4K, Mark Williams, N4HYN, Tim Forlines, N8FFY, and Ted Grimm, WD8OGZ, converged on East River Mountain on Saturday, June 15th, and replaced the old transmission line with the new hardline.

The new transmission line was lashed to the original messenger cable with the old coax used for lashing. Anderson figured that the old RG-8X cable could still be used for something useful, and it worked fine as lashing.

Practically all signal reports indicate an amazing increase in coverage, roughly equivalent to a 9-12 dB improvement. Check-ins from Roanoke, Lynchburg, and Coeburn, Virginia, and from Lewisburg, Rupert, and Hico, West Virginia have been heard. Dave Boggs, KI4AC , of Mt. Airy, N.C., uses it regularly to contact his friends in the Beckley, W. Va. area.

The Bluefield machine is a Mark 4CR repeater, made by Micro Control Specialties in Groveland, Massachusetts. Its controller is microprocessor-based, and the system has synthesized voice, autopatch, autodial, voice time readout, received signal analysis readout, NOAA weather, and other features.

Located on East River Mountain straddling the West Virginia-Virginia state line, the repeater is approximately three miles West of the East River Mountain Tunnel on Interstate 77. The repeater is easily accessible from about mile 35 in Virginia to mile 32 in West Virginia. Hilltopping extends the range North and South. East-West range is limited to approximately 15 miles except for hilltopping due to the East River Mountain range. It is accessible in the Blacksburg-Christianburg area, but you have to pick your spot. Parts of Interstate 81 provide access, especially from Pulaski to Christiansburg.

Other equipment includes Phelps-Dodge Super Stationmaster antenna, one inch hard line, 4-cavity 100 dB Waycom duplexer, 1 kva Sola constant voltage transformer for isolation and lightning protection, and MOV's and other lightning protective devices. The transformer is on loan from a friend of the club.

Because of extreme difficulty obtaining a good ground on the mountain (solid rock), Anderson has completely isolated the repeater from ground. It seems to have done the trick No lightning damage since the change, and several other systems on the mountain have sustained lightning strikes.

The next improvement to BR549 is a digital voice recorder, already on order and due to be installed by the end of August. The system will offer mailbox-type features with real voice recording. One interesting feature will enable users to hear themselves through a function called "echo."

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The Volunteer Examiner Program And How It Is Working

— by Ray Adams N4BAQ
VE Contact, Knoxville, TN VE Team

In the spring of 1984, as president of Radio Amateur club of Knoxville, I collected statements from several extra (and advanced) class members offering their services to ARRL/VEC as volunteer examiners in an attempt to organize a club team of volunteer examiners who could test on a predetermined and scheduled basis but rotate responsibilities without overloading any one person. Much to my chagrin, the ARRL/VEC corresponded directly with each particular person, totally ignoring the club to the point that I still don't know how many of our members have in fact been accredited by the ARRL/VEC as Volunteer Examiners. With no local catalyst, I do know the ARRL/VEC is not testing in middle east Tennessee.

At our Knoxville Hamfest in May of 1984, I was approached by Lou Trexler, WA4UTY, at that time a director and now chairman of Western Carolina Amateur Radio Society/VEC (WCARS/VEC) asking for recommendations for Volunteer Examiners as their contract as a VEC had already been approved and they were ready to start testing with or without a cost recoupment possibility. He was initially talking in terms of four or five VE's. I refused to separate the ones I had already referred to ARRL/VEC, consequently we ended up with a starting crew of twelve, and currently have a baker's dozen testing monthly unless another hamfest or swapfest in east Tennessee deserves our skipping a session.

At our first session, September 17, 1984, seventeen applicants preregistered. Of the seventeen, TWO 610's were completed in a manner that would be processed by the Gettysburg office of the FCC! I almost didn't believe it, but that is the pattern we are experiencing, not an exception to the rule. We were using a cut-off date of one week prior to the test, so I could flag the descrepancies in moments of casual time, labelling a 610 for any correction and/or completion needed without being forced to try this under the pressure of a dozen plus applicants breathing down my shirt collar while the entire crowd was delayed by a late starting time of the test itself. It is then a simple matter to get it corrected when the applicant shows for the test in the case of one that is preregistered.

We've always had the authorization from WCARS/VEC to accept walk-ins, and have never refused to test an applicant because of his failure to preregister, but if all applicants walked in at a session we are looking at probably up to two hours of paperwork before anyone can take a test! Even then that paperwork can't be done as accurately as it would be if we were allowed to do it in a more relaxed atmosphere. If an applicant isn't serious enough about a test to perform as simple a task as mail us a 610, copy of his present license and a check for $4.00 payable to WCARS/VEC in advance, why should we ruin a weekend by volunteering our time and risking our license just so he can try his luck at upgrading? After all, folks, the pay really ain't all that great!

To say we accept walk-ins is most certainly not an invitation to anyone desiring to upgrade to walk in as our first notice you are coming. Last minute change in plans, learning of the exam at a late date, etc. will not keep you from setting an exam in Knoxville. If you are serious about the exam in the first place, please preregister so we can accomplish better screening of the 610's and get the test started more promptly. One or two walk-ins don't really bother us, but a crowd repeatedly walking in may well cause us to retract and require preregistration.

I think by now most interested people know the questions in use by all VEC's come from Public Release Bulletin 1035 and must be used with no change in wording of the question. Each VEC decides the form that the test will be, essay, multiple choice, fill in the blank, etc. and supplies the answers. Both ARRL/VEC and WCARS/VEC opted for multiple choice. I suppose for ease of grading. ARRL/VEC released to the public all four answers to each of the 1600 questions that they are using in an effort to standardize the test nationwide. Of course it is easier to use them than dream up new ones of your own, consequently WCARS/VEC is doing just that. A few versions prepared before the ARRL/VEC was appointed are still floating around, but the correct answer will mean the same thing even if it is expressed in slightly different words. At $22.95 per element, West Radio School, 2414 College Dr., Costa Mesa, CA 92626 will supply you with the entire pool of questions and the four answers to each as furnished by the ARRL/VEC, with the announced intention of getting out of that business as soon as someone else gets reliable study material on the market.

The Knoxville VE team no longer administers element 1a, (5 wpm). Some novice class teachers use code letters formed at 15 wpm or even faster while others have learned code by other means so there is no universal manner that the applicant has learned, although he may well be sufficiently proficient at morse code to justify novice or technician class license. If I were giving a novice test I would probably say "let's see how well you're doing today" or some such and never tell the applicant I was in fact testing him until he had passed! The Volunteer Examiner Team's announced purpose of existence is to test, consequently the applicant cannot be relaxed in that manner. When we play a tape that the applicant knows is the tape, we may we well have said "Here it is buster, read it or die." Most tense under the pressure and fail the test. We will not accept a 610 which applies for a novice class license. This is properly administered by a single examiner, general or higher class and outside the formal volunteer examiner program. An unlicensed person wanting a technician license can proceed in several ways:

1. Get a novice license in the normal manner and upgrade that.
2. Instead of a copy of license, submit a signed statement from your examiner that you have passed the novice test and are waiting on the license to come in. We would perfer this statement to be about the physical size of an FCC license, not a full sheet of paper.
3. Submit the 610 that the individual examiner has signed attesting that you have passed the novice test; we will add any other elements you may pass at our session and send it on to Gettysburg for issuance of appropriate license.
4. One of our own VE's just might step outside the team and administer a novice test as an individual.

When yo pre-register it would help if you would indicate the date of the intended exam in item H of the volunteer examiner team report in the top third of the front of the 610. We can't always tell which session you intend to pre-register for and, as a result, hold the preregistration package until you miss the third session before sending it to WCARS/VEC as a no-show to avoid controversial misunderstandings.

A comparison of ARRL/VEC and WCARS/VEC, (I am accredited under both) I believe solidified our decision to test with WCARS/VEC. For the remainder of 1985, we will be testing at Tennessee Institute of Electronics, 3203 Tazewell Pike in Knoxville at 10:00 A.M. each third Saturday (except September and October). If possible please preregister with me at my callbook address. If not possible or practical, come on anyway.

Talk-in frequency 147.90 - 147.30. Any correspondence to WCARS/VEC should be addressed to them at P.O. Box 16189, Asheville, NC 28816.

34th ANNUAL

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WEST VIRGINIA NOTES

By: Ted Wolfe, WD4KHL

A number of Mountain State radio clubs have recently held mid-year elections to choose officers to serve in 1985-86.

The Putnam Amateur Radio Association membership elected Jerry Sizemore, WD8SEN, President; Mike Herod, N8BHP, Vice President; Tom McClellan, WB8MOX, Secretary; and Bob Gorham, KC8VV, Treasurer. Directors elected at the same time were: Danny Danner, K8WOG; Henry Edwards, K8YBJ; Bob Schoolcraft, WD8BCY; Terry North, WB8IFS; and Bob Mulleins, KA8EWC.

• • •

New officers for the Tri-State Amateur Radio Association at Huntington are: Larry Schwarz, WA4RHY, President; Bill Reich, KL7AH, Vice President; Al Morris, Jr., WB8FEQ, Secretary, and Phil Sanford, AF8H, Treasurer.

• • •

Les Shockey, WB8SNO, is the new President of the Jackson County ARC at Ripley. Other officers are Bob Morris, WA8CTO, First Vice President; Greg Parsons, KC8VW, Second Vice President; Geneal Bailey, NK8P, Secretary-Treasurer; Jim Dean, KC8FK, Activities Manager; and Bud Wolfe, WD8AYM, Technical Coordinator. The JCARC also voted to proceed with plans for the club's annual Hamfest. It is set for Saturday, August 10, at the Jackson County Fairground on Route 33.

• • •

On June 6 the Kanawha-Fayette-Clay ARA chose its officers by acclamation to serve July 1, 1985 to June 30, 1986. Elected were: Tooty Wood, KD8DI, President; Lyle Gaston, W8FG, Vice President; Jim Miller, WD8SCZ, Secretary-Treasurer; Ted Wolfe, WD4KHL, Publicity Director; and Bud Morris, WA8CML, Program Director.

• • •

Also in June the Nicholas County ARC, Inc., elected the following officers for the coming year: Birl O'Dell, K8VKB, President; Mike Tyler, WA8YWO, Vice President; Bill Cottrill, KC8HT, Secretary-Treasurer; and Glen Tyler, WB8GNM, James Dickerson, W8IV, and Bill Garden, WD8SEO, Directors.

The members also discussed the club's Field Day plans and its intention to upgrade the 146.34/94 repeater at Richwood. Dennie Pieri, KA8WOA, was welcomed as a new member. The club scheduled its next meeting for October.

• • •

R.L. Monroe, W8WHQ, has revealed plans to move his 144.83/145.43 repeater from the Charleston QTH of a fellow ham to a better mountain top location on Campbell's Creek several miles East of Charleston. It should, he says, improve the machine's coverage in the Clendennin-Elkview area of Kanawha County.

• • •

The East River ARC at Bluefield has moved to coordinate a new frequency pair on the Virginia side of the state line for a new mountain top wide-area, 100-watt repeater. On-air target date is Sept. 30. Coordination is through the Virginia District of CVRA-Southeastern Repeater Association.

• • •

West Virginia doesn't list any 6-meter repeaters yet, but in May two hams – one in the lower Kanawha Valley and the other in the Beckley area – made inquiries regarding coordination of repeaters on the 6-meter bands in their localities.

• • •

Engineer-aviator-ham Jim Bean, Belle, got his new call. He's now KD8YP. He used to be KA8TBQ. Also Bill Walker, ex KB8DD at Hurricane is sporting the new NK8Y call.

• • •

Are you keeping up with TV technology? How about those new PIP (Picture-in-picture) sets from Japan? The July issue of **Popular Science** has a picture of an M-PIP (Multipe PIP) set by Mitsubishi that displays nine color pictures on the same screen. My thought upon reading that was it would be great at station break or program change time for sampling

Please Turn To Next Page

Members of the St. Albans, WV, Emergency Communications Group gathered for a group shot earlier this year after participating in a transmitter hunt. PHOTO BY WD8OZT.

The RTTY sub-group of the St. Albans, WV, Emergency Communications Group is working on an MSO for the K8BCH (147.975/375) RTTY repeater. That's Karl Morris, WB8GDY, on the left. The group meets twice per month at the Hansford Center in St. Albans. PHOTO BY WD8OZT.

nine channels before deciding which of the nine to blow up to full screen to watch.

• • •

The sponsors of the Aug. 11 **Charleston Area Hamfest and Computer Show** are the Kanawha ARC, the Tri-County ARC, and the Kanawha Valley Personal Computer Club. Charleston hasn't had its own hamfest for years and sponsors of this year's event hope it can become an annual thing. The sponsors were able to book the South Charleston Recreation Center for the Hamfest and Computer Show.

• • •

The Appalachian Repeater Association and its Bolt Mountain KD8X (144.57/145.17) repeater are to be commended for giving the few packet radio active amateurs a go-ahead to use the repeater for packet experiments. There are so few hams operating this mode in West Virginia at present and they are so widely diffused geographically that they are unable to make simplex contacts. Perhaps this will generate more interest in packet and there will so on be enough digipeaters on the air to work simplex/direct.

Although the group has not affiliated with CVRA/SERA the technical gang is great and they're not afraid to experiment on their system. They earlier permitted experiments over the repeater for 2-meter RTTY and once had a bulletin board on the machine. Gary Holt, N8BZS, and the gang plan to co-locate a 6-meter repeater at the Bolt Mountain site.

• • •

A ham recently returned from a long trip complained he couldn't find any other mobiles on the air to talk with direct. He further said perhaps hams should have their own "Channel 19" for mobile use. I thought that was the idea of the many simplex channels set aside in the band. I think, however, the problem is that outside of large metropolitan areas the chance of running across another mobile ham within simplex range is a function of the number of hams in the area and what band they are working at the moment.

Many may be working another band altogether if they're operating at all. And if mobile, some will be working HF, and a lot of others working through repeaters, not necessarily 2-meter repeaters.

• • •

I still haven't been able to arrange a relay of the CVRA News Net on Wednesday evenings over the mountains into the Kanawha Valley area. I have permission from my club membership (KFCARA) to air the Net on the Lick Knob W8FG/R (144.87/145.47) repeater if someone will agree to handle the relay. Any volunteers who can pick up the Bluefield, Mullens, or Galax repeaters and rebroadcast them live into the 144.87 input of the Lick Knob repeater?

• • •

The new, coordinated 144.67/145.27 repeater at Craigsville, WV, was activated on Sunday, June 16. After a week of operation the antenna was raised a bit and an improved receiver installed. The KD8OG repeater is linked with the Weston, WV, WD8EOM 144.79/145.39 repeater.

• • •

Sponsors of the WB8GDY 146.40/147.00 repeater at St. Albans this summer will raise the machine's antenna to "get it out of the dishes" on its tower on Dry Ridge in St. Albans. Also some new parts will be integrated into the repeater.

• • •

I had never actually seen a copy of the **W5YI Report** until recently. At the last KFCARA club meeting Dempsey Baker, KC8AM, gave me a year's worth of past issues to read. If you've got the loot for a subscription it's quite informative. But it costs almost as much

Continued on Next Page

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West Virginia Notes

Continued from Page 36

as a subscription to QST or 73.

• • •

Right at deadline, and after I had already sent in changes for the listings in this issue for West Virginia, I talked with Charles Dotson, WB8SNL, who has a repeater at Harrisville, WV, on 147.90/30. He said it had been operational since the late '70's and was coordinated before CVRA/SERA came into West Virginia. The machine used to be listed at Pennsboro. And, sure enough, I checked way back and found the listing. Sorry, Charles, about not knowing at all about your repeater.

Also I spoke with Brent Hyre, WD8LND, Buckhannon. He has 146.04/64 on at Buckhannon, which we didn't have listed (will catch up next issue). He said he had been in contact with CVRA but had gotten nothing back in writing. Now that he's been in direct contact he's requested CVRA/SERA membership information for his machine.

There may be another machine coming in the National Radio Quiet Zone. A ham has contacted us for coordination and indicates his preferred frequency is apparently open in the area he plans to put the machine, and he indicates, he's been in touch with the NRQZ people and doesn't anticipate any opposition there. More about this if it does come about.

• • •

Buck Earley, Jr., WA8USO, Ravenswood, says he's putting a digipeater there on 145.01 and it should be operating by August. It will support an electronic bulletin board. Buck says he's able to work Columbus and Morgantown. He also works Eben Staggs, WD8FQJ, in Logan. Eben plans a digipeater on either Blair or Ward Rock Mountain in Logan. He can work Buck and also access some digipeaters in Kentucky and Virginia. Maybe packet is finally about to arrive with a viable net in the Mountain State with connections to neighboring states. Keep me informed of your packet activities so we can "put it in the **Journal**."

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More On Tax Exemption - The Final Chapter

Exempt Organization Group, Internal Revenue Service, Atlanta, as I knew no other Internal Revenue Service agent in the Southeast could talk intelligently on the subject.

They assured me they were not about to assess such a penalty under the conditions I described against a newly-appointed officer who was proceeding in good faith to straighten the mess out. I'll never forget the group supervisor's wording - "With an axe like that hanging over the head of anyone who accepted the appointment, no one would ever accept it and a resolution of the problem could never be accomplished - certainly we want to work with you rather than against you."

So, I accepted the appointment and began sifting through the material Sam had brought over the mountains. The situation should have been handled by a tax professional a full ten years before I saw it! Conditions had deteriorated to the point that on May 1, 1980, the Exempt Organization Group, Internal Revenue Service, Atlanta had closed their file on CVRA, ordering the organization to file form 1120 (conventional Corporate Income Tax Return) and pay the tax since organization! The Exempt Organization Group supervisor had told me they would consider re-opening the case if I could demonstrate justification.

I have considered myself a Federal Income Tax professional since 1959, and, except for 11 months, I have worked in public accounting continuously since that date; mine is the only name on the front door of the modest suite of offices from which this narrative generates, but I had never seen one this deep in the hole. COULD I PULL IT OUT? It was in the fall of the year, meaning I had time to spare, so I accepted the challenge, knowing CVRA couldn't come close to hiring a professional to do it right, as my time on the matter to date, at my normal billing rates would exceed half our present annual budget!

First decision to make was which of the two dozen or so classifications of tax-exemption should we apply for? Being a full believer in nothing ventured, nothing gained, I applied for the one that gives the organization the most freedom and privileges, namely §501(C)(3) with the expectation that I would compromise for what I could get. I saw nothing to lose in a bid to shoot the moon!

I won't again burden you with the initial details of procedure for two reasons - first it would only be a repetition of an article in the May, 1982, Journal, and secondly, Wayne wouldn't print it again, as he had to go to an undersized type and an oversized journal to print it the first time! The bottom line is that on March 30, 1982, the District Director, Internal Revenue Service, Atlanta, Georgia signed the exemption letter which exempts CVRA - Southeastern Repeater Association, Inc. from federal income tax under §501(C)(3) of the Internal Revenue Code. Yeah, one of the things I had to do was get the North Carolina Articles of Incorporation amended to change the organization's name to its present version in compliance with minutes nine months old which had not followed through! Hey, fellas! That's the charitable and educational exemption which allows a deduction for federal income tax purposes for contribution to **or for the use of** the exempt organization! This means any unreimbursed out of pocket expenditures for the benefit of CVRA-SERA is a qualified charitable contribution, deductible, within the tax structure of the particular donor, by the donor. One of our directors or any other representative that attends a hamfest, for instance, principally on behalf of CVRA-SERA can include the entire cost of the trip, including automobile usage at the current rate of nine cents per mile, in their charitable contributions for the year, limited to 20% of the donor's adjusted gross income. This is, of course includable only as an itemized deduction, or a very limited amount, topping out at 25% of the first $300.00 for the non-itemizer, and that one is even under attack by the President's current tax reform program.

The above-mentioned letter left open two important items, whether or not we were a private foundation and an income tax on unrelated business income. These two items would only be considered after December 31, 1983. The private foundation bit really didn't bother me that much, because all we had to do was demonstrate a broad base of support rather than a few donors supplying our funds. At either four or eight dollars per member, depending on whether you are referring to associate or full membership, we demonstrated that quite readily. That unrelated business income bugged me just a tad. The ARRL pays income tax on the profits generated by QST and their publication sales. A §501(C)(3) or any other exemption that I am aware of doesn't cover profits generated by the publishing business, and we are the proud publisher of the REPEATER JOURNAL which does sell advertising! Many would assume that because advertising revenue doesn't cover the cost of publishing the journal, we would have nothing to worry about. Unfortunately, the Internal Revenue Service doesn't agree with that. Their position is that the advertising revenue must be matched to the cost of publishing the journal multiplied by the percentage of space occupied by said advertising. You say ouch; I say let's figure. During the initial negotiations for exemption I had gotten a several page description of the volunteer labor involved in operation of CVRA in general and the publication of the journal in particular, detailed as to the types of work and the number of man-hours of each involved. I extended those man hours by union rates, added the courtesy quotation from a local commercial data processor as to the value of mailing labels and the related data processing necessary to maintain those files, then added actual expenditures involved in publishing the journal, multiplied the whole mess by the percentage of space occupied by advertising during calendar year 1983, and **lookie here!** We are, by that calcultation, **loosing** money on the advertising. There is no unrelated business income; at least that was my argument.

On June 18, 1985, the District Director, Internal Revenue Service, Atlanta, Georgia signed their letter of final determination as to the tax status of CVRA - Southeastern Repeater Association, Inc. It clearly states in so many words that we are not a private foundation. Because it does not address income tax on unrelated business income, **we are not considered to have any!**

WE WON!!!

I'm told by Ann Baker, the agent who handled the final determination, that the question will not be addressed again unless we file a form 990-T and voluntarily pay the tax, then file a claim for a refund.

In the first place, we aren't required to again report to the Internal Revenue Service until our gross receipts reach $25,000.00 per year, (it amounted to $18,658.15 in 1984) and even then I most certainly would file a plain old 990 and report no unrelated business income in keeping with my original position.

I hope I am justified in the professional pride I feel in accomplishing for CVRA-SERA a more advantageous position on federal income tax than the ARRL has. It wasn't easy, and you couldn't afford me, but I did it anyway. Believe me, it was an education to come from where we were to where we are. Your only cost has been to reimburse me for actual telephone and postage - just like any other CVRA-SERA officer, director, or volunteer.

In a letter soliciting advertising for the Journal in early 1985, I raised the question if we were the national co-ordinator in its infancy. The May issue announced formation of an Eastern Kentucky District. I understand a meeting of repeater operators at the Atlanta, Georgia hamfest as to Georgia's future will consider forming a Georgia District as one of their viable options. I fully believe we are the type of organization that has just begun to grow. I'm proud to have the inner satisfaction of having helped with that growth.

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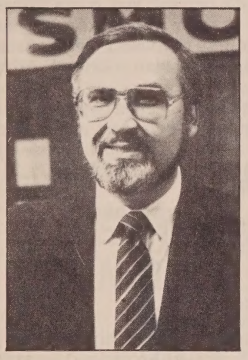

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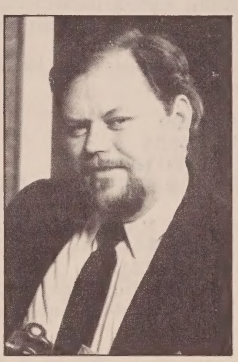
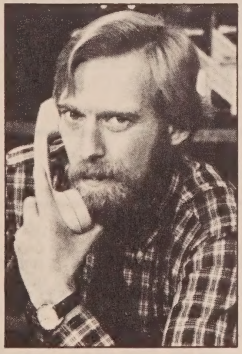


Ken
N4FYO



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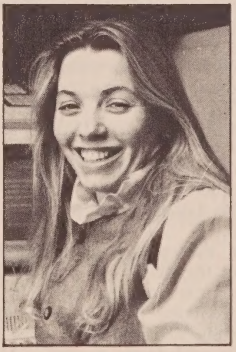

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Anatomy of a TNC

— by Gil Frey, K4JST
(fm. Ole Va. Hams Newsletter)

The following is a brief description of the Tuscon Amateur Packet Radio (TAPR) Terminal Node Controller (TNC). An analysis of the TAPR unit is useful to begin to understand the tasks needed to transform ASCII or binary input into packets and to translate packets back into ASCII or binary code.

The TNC serves as an active interface between a data terminal (usually a microcomputer) and an amateur transceiver. The TNC consists an input/output (I/O) port, a central processing unit (CPU), data storage buffer (RAM), modem, packet formater (HDLC), plus software to controll all of these functions (ROM).

The TNC consists of the following major subunits:

1. **CPU - 6809**
2. **UART - 6551**
3. **HDLC - WD1933**
4. **Modem - EXAR 2206 / EXAR 2211**
5. **Memory - RAM - 6264 (8K CMOS) ROM - 2764 (EPROM) NOVRAM - 2212**
6. **VIA - Versitle Interface Adapter**
7. **Bus - Address, data, timing plus system clocks.**

The 6809 CPU is an 8 bit "computer on a chip" like the Apple II. The CPU handles timing, memory transfers and other functions including the execution of the software stored in the ROM.

The UART or serial port handles data transfers between the TNC and the terminal program in the computer. The 6551 Universal Asynchronous Receiver Transmitter (UART) and a 1488/1489 TTL to RS232 level translators makes the transition from the parallel format of the CPU and sends the data in serial format to the terminal.

The modem converts the serial data from the HDLC ie the packet itself into two audio tones that can be fed into the microphone jack to modulate a transceiver. VHF packet uses a 1200 baud rate with tones at 1200 and 2200 hz. The modem on the TAPR TNC can be set to handle various baud rates up to 1200 baud. This internal modem can also be disconnected (using on board jumpers) to allow the use of an external modem for rates up to 19,600 baud. The internal modem includes calibration circuitry for initial calibration and later recalibration.

The real workhorse of the TNC is the HDLC (High-level Data Link Controller). This chip (Western Digital 1933) takes the place of some 19 SSI and MSI chips or many pages of assembly programing. Basically, the HDLC forms

PACKET RADIO

the five non-data field portions of the packet and combines them with user supplied addressing and text to yield a finished packet. While not inexpensive at $22.50, it is a true bargain compared to the expense of discrete components.

Another LSI component is the 6522 VIA (Versitle Interface Adapter). This unit supplies the HDLC with timing and reset signals. It also is involved with the writing to and protection of the NOVRAM (Non-volitle RAM). The VIA also provides the CW ID tones.

There are several memory functions in the TNC. Four chips (32K) are ROM (Read Only Memory). These EPROMS contain the software that the CPU executes. These units can easily be upgraded as new editions of the protocol or software are made available (present charge is $1 per chip). The RAM (Random Access Memory) is used by the CPU and is also used as a data flow buffer or spooler. The unit as supplied has 8 k of ram with a blank socket for an additional 8 k. At $50 per 8 k CMOS RAM, this expansion is not to be taken lightly. The third memory is the NOVRAM or non-volitle RAM. This is a nice convenience feature that allows the TAPR unit to store infrequently changed parameters such as the user's call sign, beacon rates, baud rates, etc. Some other units require that this be burned into an EPROM at the time of manufacture.

In general, the TAPR approach offers a sophisticated, easily alterable approach to packet communications. The kit goes together in about ten hours and the instructions and other documentation are very well written. Trouble shooting requires a DMM and perhaps a scope and logic probe. The TAPR interface instructions for common VHF equipment saves a lot of time. It helps to have someone experienced with packet to help with the first contact. The command set is a little confusing until you see just what each command does. The present cost of the complete kit is $240.

AE4N/MARK 4 VEC Examination Sked

These exams will all be conducted at the GTCC campus, Jamestown, N.C. in Davis Hall, Rm. 217. They are all walk-in, no pre-registration required (VE's do request you contact them a couple of days before exam if possible for planning purposes). Tests available: Novice, Technician, General, Advance and Extra.

Persons coming to take examination elements are asked to bring a copy of your license, your original license, proper I.D. and the $4.00 fee.

Exam Schedule

AUG. 30 - 6:30 P.M.
AUG. 31 - 9:00 A.M.
SEPT. 27 - 6:30 P.M.
SEPT. 28 - 9:00 A.M.
OCT. 25 - 6:30 P.M.
OCT. 26 - 9:00 A.M.
NOV. 30 - @GREENSBORO HAMFEST
DEC. 1 - @GREENSBORO HAMFEST

For further information, contact: Rudy Varney, KC4AM at (919) 292-6565, or Hugh Brunson, AE4N at (919) 852-1087. Volunteer examiner teams are available for conducting examinations at your club or school. Contact any MARK 4 Club member for details.

Stubby *by Fred Hurteau, WD4SKH*

OH, MY GOODNESS STUBBY, WHAT HAPPENED TO YOU?
YOU REMEMBER THAT CUTE LITTLE BABY AT MY PLACE? WELL HE'S ONE YEAR OLD NOW, AND WALKING. WELL.... I WAS ACCIDENTLY LEFT WITHIN HIS REACH AND HE TRIED TO EAT MY ANTENNA!! THEN.....
....HE TURNED MY VOLUME UP SO FAR, WHEN THE REPEATER I.D. CAME ON IT SCARED HIM SO BADLY HE DROPPED ME. I FELL ON HIS FOOT AND HE STARTED TO CRY. THEN HE STEPPED ON ME AND LOST HIS BALANCE AND SAT DOWN ON ME!!
OH MY, POOR DEAR. THAT MUST HAVE BEEN A FRIGHTFUL EXPERIENCE.
YES IT WAS RATHER PAINFUL, BUT I'LL GET OVER IT.
I WASN'T TALKING ABOUT YOU, SILLY!!

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1234 LITTLE BAY AVENUE
NORFOLK, VIRGINIA 23503
TELEPHONE: (804) 587-1695

Chattanooga Grows On Hospitality

by — Bill Wiggins, N4BMR

The historical City of Chattanooga began as a trading post for early settlers crossing the mountains of the Western Carolinas, North Georgia, Alabama, and Southeast Tennessee. Strategically located on the Tennessee River, it became a critical military objective during the War Between the States. Control of Chattanooga meant control of rail and river supply lines to much of the South. Major battles, such as the Battle of Chickamauga and the Battle Above the Clouds on Lookout Mountain, were fought to gain control of this critical location.

In modern history, Chattanooga has become an industrial center, and a noted tourist area. It is known for it's friendliness, and southern hospitality prevails throughout the area.

For anything to grow it must be spawned in an environment conducive to growth. This is the secret of Hamfest Chattanooga's success. Hamfest Chattanooga will be held for the seventh consecutive year in beautiful, historical Chattanooga, Tennessee on October 26 and 27, 1985. Providing an atmosphere of warmth and hospitality is the number one priority of the sponsoring organizations - Chattanooga Tri-State FM Association and Chattanooga Amateur Radio Club.

The hamfest began in 1979 on the campus of Chattanooga State Technical Community College. In 1981, growth necessitated expansion to other buildings and space on the campus. The hamfest continued to grow and in order to provide an all indoor area, in 1984 we moved to the Memorial Auditorium in downtown Chattanooga. That move was a resounding success. We filled and overflowed the Memorial Auditorium, and it was time to expand again. Hamfest Chattanooga 1985, as host of the Delta Division Convention, will be held in the new and modern Chattanooga-Hamilton County Convention and Trade Center, located downtown on Carter Street, one block off I-124. Exhibit halls, covered parking facilities, and a hotel are all a part of this new complex.

Hamfest Chattanooga will be held in late October when fall colors are at their peak in Southeast Tennessee. It coincides with the Fall Color Cruise sponsored annually by the Chamber of Commerce. There are numerous attractions available for visitors. The battle sites of Chickamauga Battlefield, Point Park, Signal Point and Missionary Ridge are all interesting. Additionally, there are tourist attractions on Lookout Mountain and the Chattanooga Choo-Choo complex at the old train station.

If you have not attended Hamfest Chattanooga, make plans to do so in 1985. Enjoy it's hospitality, and see why it has become one of the South's leading hamfests.

Concord Hamfest

The Concord (N.C.) Hamfest will be held Sunday, Nov. 3, at the Central Cabarrus High School. Featured will be flea market, new dealers, concessions, forums and FCC exams.

REPEATER-CLUB-NET SERVICE PAGE

"SUPER 13"
Pt. Lookout Mt., Va.

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Utility Poles & Hardware

We have a limited variety of utility pole hardware and can supply utility poles in the Greensboro, N.C. area.

Scotchkote Electrical Coating

Made by 3-M Co. Can be used for underwater connections also. A 15 oz. can will do 50 to 100 connections.

15-oz. can Scotchkote coating $8.00

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SIZES FROM NO. 4 TO 1-INCH
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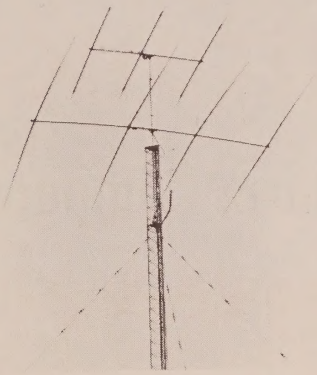

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High quality commercial units. Low loss, low noise. Frequency range through 1 Ghz. Bulkhead and inline types available, including rotor cable and D.C. control lines. Call for prices.

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PL-259 CONNECTORS (U.S. Made) .....65¢ ea.
10 or more .....60¢ ea.
UG-175 or 176 ADAPTERS.....30¢ ea.
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Aluminum mast pipes, feature 2-inch OD 6061 tubing with 1/4-inch wall.

12-foot lengths, 19 lbs. - In Stock
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Touch rust spots on your tower and antenna bolts with RUSTOLEUM, cold galvanizing.

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WIRE – Single Conductor-Stranded,
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#10 wire.....30¢ per foot #14 wire.....20¢ per foot

FUSE BLOCKS – Our fuse blocks are rugged holding fuses much larger than the little 3AG glass type. This prevents overheating and voltage loss with high currents. Set screws in end of fuse blocks will accept wire up to #6.

30-Amp Fuse Block $4.95
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FUSES—5,6,7,8,10,20,25,30 Amp ....80¢ each
35,40,45,50 & 60 Amp. Fuses also available upon request.

RELAYS—These Motorola Type A style relays can be installed near the fuse block in the fenderwell and remotely switched under the dash with a small toggle switch. Excellent for switching high current lines. Relays are a closed type with screw terminals for mounting. .....Special $13.95

40-Amp cont. duty, solenoid-type, 12V 19.95
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GUY WIRE INSULATORS – Compression-type porcelin. Approx 1½x2½-inches, 3/8-inch hole
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STEEL WIRE – Zinc coated. Can be used for antennas or light guy wire, not recommended for tower guying. Sold in 10 lb. coils only.

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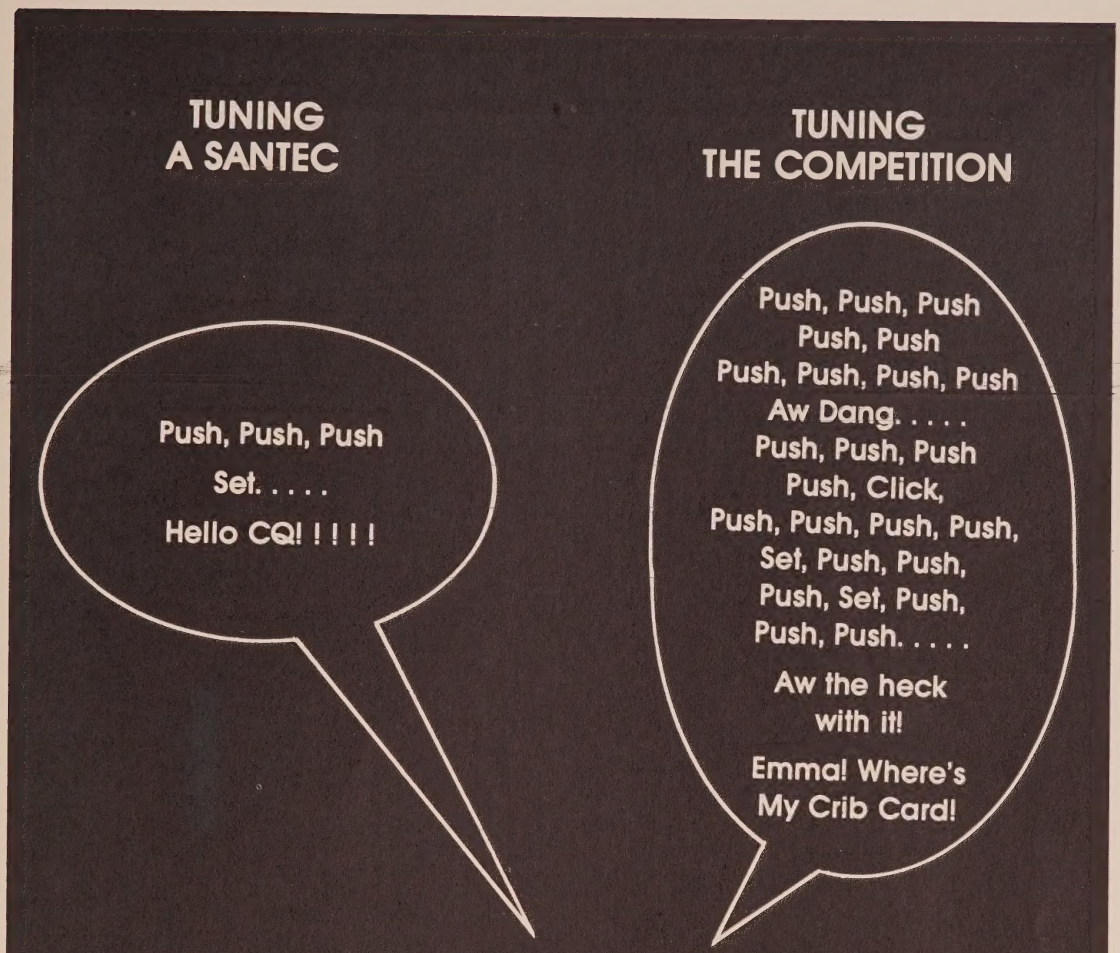

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Charlotte RTTY Repeater Moves To New Location

— by Howard Cochran, W4PPN

On May 11th the W4BFB RTTY repeater was moved to a more favorable location on Anderson Mountain, Northwest of Charlotte. This repeater was first placed on the air in November of 1982 at the QTH of W4PPN and has been on the air from at least two locations since then. In an effort to encourage greater use of this mode, the decision was made to make the move to its new location.

This repeater is a full regenerative repeater. This means that the incoming RTTY signal is not passed thru the machine like a regular voice repeater. The incoming tones are fed to a HAL ST-6 RTTY demodulator which in turn keys in sequence an Audio Frequency Shift Keyed oscillator (AFSK). The output from the AFSK oscillator is fed to the transmitter audio input and is transmitted as an audio tone that shifts in frequency. The reason for this approach is to maintain a constant level of audio out and also a standard shift as well as tone frequencies. This means that any station strong enough to bring up the repeater and key the ST-6 will produce nice solid audio on the repeater output.

This repeater will pass baudot up to 100 WPM and ASCII at 110 BAUD. It is set up for 170 Hz shift with standard tones of 2125 Hertz for mark and 2295 Hertz for space.

At this time the repeater is running about 9 watts to the antenna. At present all you need to key up the repeater is to place a signal on the input frequency. The repeater operates on the coordinated frequency of 146.175 - 146.775. The machine has been set up in the present conditions to permit anyone to key it up to see what kind of coverage we are getting from this location. If you bring the repeater up you will hear the space tone with the ID signal in the background at a lower frequency.

Sometime in the future the repeater will be switched to a mode that will only permit the system to be brought up with a valid mark signal appearing on the input frequency.

Everyone is encouraged to use the repeater and the W4BFB RTTY Mailbox that is a part of the system. To access the mailbox type in W4BFBZW. It will help to follow the following procedure: RYRYRYRYRYRYRYRYRY W4FBZW.

If you wish a full set of mailbox instructions type in the following with a carriage return and then switch to receive: RYRYRYRYRYRYRYRYRY RY W4BFBZI.

Many thanks to WD4JWO, WB2LEI, W4FKT, WD4ABZ and KF4WY for their help in moving the repeater to its new location.

CUL OM ON RTTY DE W4PPN "HOWARD" MINT HILL, N.C. K K K

REPEATER JOURNAL ADVERTISING RATES

Effective 1 January 1985

The Repeater Journal is a 3 column magazine with overall page dimension of 8½ x 11 inches. Our page size enables a wide variety of ad sizes from full page down to one column inch size.

Column Widths are 1 col: 2-1/4-in., 1-1/2 col: 3-1/2-in., 2 col: 4-5/8-in., 3 col: 7-1/8-in. Ad widths will be based only with the specified column widths.

DEADLINES: New advertising copy or ad changes must be in the hands of our Advertising Manager no later than the 20th of the month on the 2nd month prior to publication. We cannot guarantee insertion of ads after deadline, although every effort will be made to accomodate.

ADVERTISING DEADLINES

FEB. Issue–Dec. 20	MAY Issue–Mar. 20
AUG. Issue–June 20	NOV Issue–Sep. 20

CVRA REPEATER JOURNAL advertising rates apply to exact size, camera ready copy. We can provide typesetting and reduce art for your ad at our cost. Composition and typesetting for full page ad approximately $25 to $28. Half page ad from $12 to $15. Reduction of artwork for ad with no type needed is $4.50. COLOR: We can provide one additional color on our standard color pages for $25.00.

The Repeater Journal layout size is very close to most National magazines. If you wish to use a page from one of the magazines, to promote your product, we can reshoot on the camera, insert your store name and customize for your particular application. Be sure to submit a clean, unwrinkled copy of the magazine page.

Contract advertising may be billed quarterly at the request of Advertiser. No volume discounts or contract discounts are available. It is the advertisers responsibility to cancel or request changes in advertising at the time he pays his bill, or before ad deadline, otherwise, advertising will be repeated until further notice.

BUSINESS CARDS, CLASSIFIED ADS AND HAMFEST advertising must be sent accompanied by full payment for insertion. Advertisers who have not paid for previously published advertising before upcoming issue deadline, cannot have any advertising inserted until account is paid in full.

The CVRA REPEATER JOURNAL cannot be responsible for errors in advertising, or held accountable for equipment or accessories that do not live up to the advertised claim. We are not responsible and cannot guarantee insertion of advertising received after deadline.

Advertising copy MUST be mailed to: REPEATER JOURNAL ADV. MANAGER, SHARON WARD, 5573 Vienna-Dozier Rd., Pfafftown, N.C. 27040.

REPEATER JOURNAL ADVERTISING SIZES AND RATES

Ins. Frt. or Ins. Bk. Cover	7-1/8" x 9-7/8"	$90.00
Full Page	7-1/8" x 9-7/8"	75.00
Full Page Bleed (any sides)	8-1/2" x 11"	90.00
2/3 Page (Vertical)	4-5/8" x 9-7/8"	55.00
1/2 Page (Horizontal)	7-1/8" x 4-3/4"	42.75
1/2 Page (Vertical)	3-1/2" x 9-7/8"	42.75
1/2 Page (Vertical 2-col)	4-5/8" x 7-1/8"	42.75
1/4 Page (Vertical Only)	3-1/2" x 4-3/4"	24.00
1/3 Page (Vertical Only)	2-1/4" x 9-7/8"	30.00
1/6 Page (Vertical)	2-1/4" x 4-3/4"	16.00
1/6 Page (Horizontal)	4-3/4" x 2-1/4"	16.00
1/12 Page (Vertical Only)	2-1/4" x 2-1/4"	9.00
Business Cards – Standard Size	(4 Issue Contract Only)	14.00/yr. In Advance

Classified Ads (30 Words Maximum per ad) In Advance..... 2.50
Color (1 additional color plus black) An Size add..... 25.00

Sizes listed above are width by length in that order. Ads which run lengths between sizes listed above will be billed according to column inch rate at midpoint. Prices above are for exact size, camera ready positive photoprint, or pasteup. Camera work, typesetting additional. No charge for layout.

Dealers and Manufacturers: You Can Reach over 4,000 readers with your New Fall Lines of Radios and Transceivers by Advertising in the Repeater Journal. That's only about 2¢ Per Person.

Up, Up And Over

— by Art Thiemens AA4AT

Through the years I have refined the bow and arrow method of getting wire antenna supports high in trees or other high objects. I have put up many, many antennas for myself, new novices, handicapped hams and it is a yearly activity of Field Day for our Club for a four station entry.

For example, on field day I put up antennas 70-90 feet in tall pine trees and also used a water tower's bracing. At home, I have a 8 meter Quad loop up 60 feet and an inverted Vee up 50 feet using oak trees as support for 40.

I use a cheap wooden target arrow, a spinning reel with 10-15 lb. line and a bow. The fishing line is tied to the arrow near the notch. i usually bore a small hole through the arrow base, just large enough to accept the line. The key element of success is to weight the arrow tip enough so it will continue to pull line from the reel after the arrow is on its downward flight through three limbs and foilage after it has reached the apex of flight. I use a roll of acid core solder for the weight. It is rolled around the tip of the arrow for about 12 turns, then add 6 of more turns on top of the 12, then cut the solder and cover it with a layer of vinyl tape to keep it secure. This then locks similiar to a rattlesnakes tail around the business end of the arrow. You can very the amount of turns of solder as appropriate depending on the pull strength of your bow. I now use a compound bow adjusted to about 35 lbs. pull, but have used all kinds. I started using a boys starting bow, and graduated to a better bow as I found them at flea markets, etc.

A friend can hold the fishing rod and reel, pointed upward while you shoot. I use a fishing rod holder stuck in the ground to hold the rod/reel. My XYL has long ago tired of acting in the holding capacity.

After the arrow has carried the line over your high tree limb and is back on the ground, you tie a heavier cord of light rope to the fishing line at the arrow. The arrow is then cut off and you reel in your line with the heavier cord or light rope attached over the tree limb and back down to the ground. I use nylon mason line of about 70 lbs. test, purchased from any hardware store. It's cheap and easily found. For permanency, you should use heavier cord or rope. However, if you want to first pull a lighter cord such as mason line over the limb with a fishing line, then attach the heavier cord or rope to it. The fishing line will not pull a heavy rope over the limb without breaking. Good shooting!!

CLASSIFIED ADS

TOO MANY MICROPHONES on your Operating Desk? With the SISCO Model 612 mic control you can now use one microphone with several rigs. Prices start at $15.95. SOUTHERN INSTRUMENTATION, P.O. BOX 5097, ORMOND BEACH, FL. 32074. (904) 673-1059.

KDK & SANTEC CLOSEOUT - Making way for new models. Best prices on the few remaining KDK FM-2033 2-meter transceivers. ($245,00), and the SANTEC ST-142 handy-talkie ($229.00). FREE UPS Shipping. While they last! WILLIAMS RADIO, 600 Lakedale Road, Colfax, N.C. 27235 (919) 993-5881.

HOT-P JOURNALS. Get your Journal mailed First Class the afternoon it comes from the printer, instead of the following Monday morning, 3rd class bulk. HOT-P memberships are available to Associate members for 1 year. Cost is only the extra needed for mailing First Class. Rate is only $8.50 per year. Write our Associate Membership chairman for details of how to convert your existing Associate membership over to HOT-P. His address is on page 2.

SERA DECALS are still available. Enclose SASE, and 50¢ for each decal desired. Mail to: SERA DECAL, P.O. BOX 5655, GREENSBORO, N.C. 27435. CVRA DECALS make nice handouts to club members who are SERA Members. Get yours today!

ICOM IC-27A only $319.00, IC-27H only $359.00. KENWOOD TH-21A/T only $195.00. KENWOOD TR-2600 only $285.00. Add $2.50 for UPS shipping. WILLIAMS RADIO, 600 Lakedale Road, Colfax, N.C. 27235. (919) 993-5881.

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OUR CLUB REPEATER
147.63 147.03
NEED INFORMATION, JUST KEY UP AND ASK!

Coming Events

CLUBS-HAMFEST COMMITTEES NOTE: We will begin publishing a partial list of 1986 Hamfests and Conventions in the NOVEMBER issue of the Repeater Journal. Please send your confirmed dates to the editor. DEADLINE for the FREE insertion service is OCTOBER 1, 1985.

AUGUST

3-4 ..... Hamfest, JACKSONVILLE, FL
4 ..... Winchester Hamfest, BERRYVILLE, VA
10 ..... Jax Cty. Hamfest, COTTAGEVILLE, WV
11 ..... Hamfest, S. CHARLESTON, WV
11 ..... Hamfest, LEXINGTON, KY
17-18 ..... Hamfest, HUNTSVILLE, ALA
25 ..... ERARC Hamfest, BLUEFIELD, WV
31 ..... CVRA-SERA Annual Meeting, SHELBY, NC
31 Aug.-1 Sept. ..... Hamfest, SHELBY, NC

SEPTEMBER

6-8 ..... Florida State ARRL Conv., MELBOURNE, FL
14-15 ..... Hamfest, MOBILE, AL
21-22 ..... VA ARRL Conv./Hamfest, VIRGINIA BEACH, VA
26-28 ..... QCWA Nat'l Conv., WINSTON-SALEM, NC

OCTOBER

4-6 ..... ARRL National Conv., LOUISVILLE, KY
12-13 ... Central Ga. ARC Hamfest, WARNER ROBBINS, GA
13 ..... Hamfest, MAYSVILLE, NC
19 ..... Tri-Cities Hamfest, DUBLIN, VA
26-27 ..... Delta Div. ARRL Conv., CHATTANOOGA, TN

NOVEMBER

2-3* ..... Hamfest, STONE MT., GA
3 ..... Hamfest, CONCORD, NC
30-Dec. 1 ..... Hamfest, GREENSBORO, NC

CVRA-SouthEastern Repeater Association, Inc.

FINANCIAL REPORT AS OF JUNE 30, 1985 AND JUNE 30, 1984

REVENUES	1985	1984
Advertising	$ 4,117.85	$3,518.00
Associate Membership dues	5,691.88	4,613.00
Full Membership dues	2,413.00	1,374.00
Decals	110.00	-0-
Postage - includes H.O.T.P.	48.50	-0-
Other	6.50	29.75
	$12,387.73	$9,534.75
EXPENSES		
Journal mailing	$ 1,015.67	$1,223.85
Journal printing	7,893.41	7,918.75
Miscellaneous	541.32	2.35
Directors meetings	768.68	534.19
Office expenses	175.22	8.67
Postage - other than journal	144.45	69.12
Printing - other than journal	813.27	62.80
Telephone	219.97	129.66
	$11,571.99	$9,949.39
EXCESS (DEFICIT) OF EXPENSES TO REVENUES	$ 815.74	$(414.64)
Balances, beginning of year		
Expenses advanced	$ 900.00	$ 800.00
Invested in copy machine	1,344.00	1,792.00
Cash in bank	1,413.04	2,507.39
	$ 3,657.04	$5,099.39
EQUITY TO ACCOUNT FOR	$ 4,472.78	$4,684.75
Less: Expenses advanced	$ 900.00	$ 900.00
Invested in copy machine	1,344.00	1,792.00
	$ 2,244.00	$2,692.00
CASH IN BANK	$ 2,228.78	$1,992.78

Respectfully submitted,

Ray Adams

Ray Adams, N4BAQ
Treasurer

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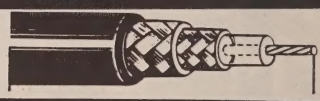
DEADLINE FOR HAMFEST ADVERTISING for November issue is September 20th. ALL shows which are scheduled for November, December, January and early February should be advertised in NOVEMBER ISSUE, to get coverage. Contact our Sales Manager, Sharon Ward (See Page 1).



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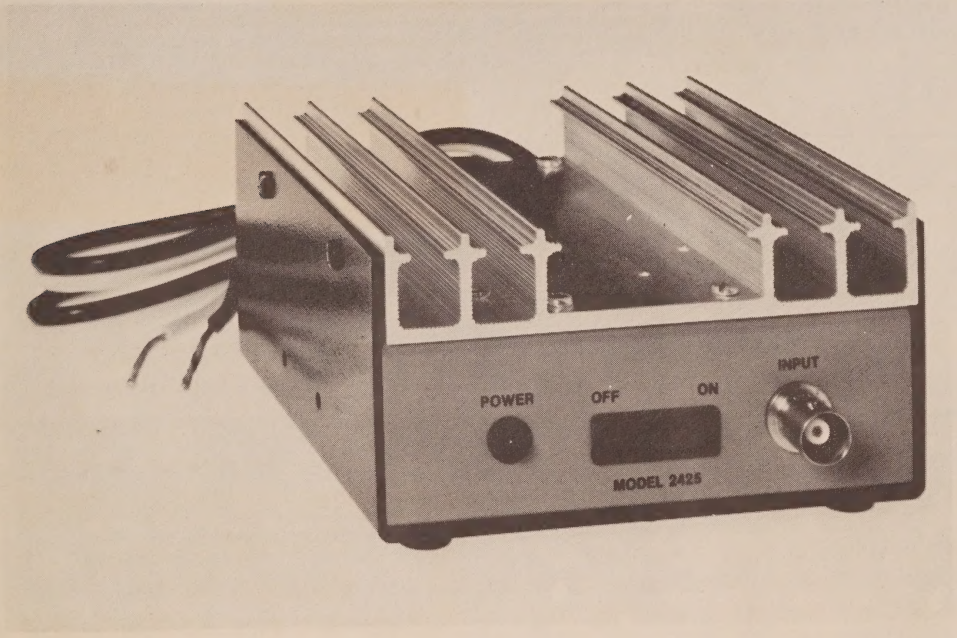
BOOSTS HANDHELD POWER UP TO 30 WATTS!



SPECIFICATIONS

FREQUENCY RANGE: 144 to 148 MHz

MODE: FM

INPUT POWER: 1 to 3 WATTS

OUTPUT POWER: 25 to 30 WATTS @ 2.5 WATTS INPUT

HARMONIC OUTPUT: MORE THAN 60 dB BELOW CARRIER

DC POWER: 13.8 VDC (NEGATIVE GROUND) @ 5 AMPERES

IMPEDANCE: 50 OHMS INPUT AND OUTPUT, UNBALANCED

FUSE: 7 AMPERES

SWITCHING: CARRIER OPERATED RELAY

SIZE: 2-1/4" X 4-1/8" X 5" (HWD)

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AMATEUR NET: $79.00

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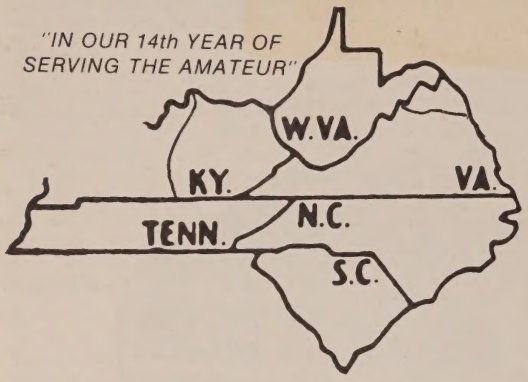

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